Canada

POST OFFICE DEPARTMENT

[annual publication]

A CANADIAN PUBLIC ADDRESS POSTAL CODING SYSTEM

NOVEMBER 1969

SAMSON
BELAIR
RIDDELL
STEAD
INC.

POST OFFICE DEPARTMENT

A CANADIAN PUBLIC ADDRESS POSTAL CODING SYSTEM

SAMSON
BELAIR
RIDDELL
STEAD
INC.

PREFACE

The current year has been a searching period of critical re-examination for the Canada Post Office - its organization and its operations. To the outsider looking in, the most encouraging trend that has emerged is the enthusiastic and constructive response to new challenges, by the Department's officers at all levels, and their demonstrated willingness to pursue the goal of constant improvement in a vital national service.

Within the perspective of total Postal Office operations, the design of a national postal code may seem quite trivial to the layman. Our involvement in this study, aimed at contributing to more effective future performance has, however, convinced us that a sound coding structure can and will play a most valuable role in promoting beneficial changes. We envisage that changes, derived from a coding system, would extend beyond being merely an aid to mechanization, to other implications in the administrative and organizational areas.

Not the least of the foreseeable changes should be the encouragement of closer coordination between those many organizations, in both the public and private sectors, which have a valid need to gather and distribute, analyze and correlate, information and services based on the postal address as the indispensable link.

In presenting a report that, in part, is necessarily somewhat technical, and conscious of the limited time available to senior Post Office executives to whom many such reports have been submitted recently, we include a synopsis and summary of our recommendations, as Section 1 of this report.

SAMSON
BELAIR
RIDDELL
STEAD
INC.

GOVERNMENT OF CANADA

POST OFFICE DEPARTMENT

A CANADIAN PUBLIC ADDRESS POSTAL CODING SYSTEM

FINAL REPORT

NOVEMBER 1969

TABLE OF CONTENTS

TABLES

EXHIBITS

APPENDICES

SAMSON
BELAIR
RIDDELL
STEAD
INC.

POST OFFICE DEPARTMENT

A CANADIAN PUBLIC ADDRESS POSTAL CODING SYSTEM

November 1969

1. SYNOPSIS AND MAJOR RECOMMENDATIONS

.1 Executive Synopsis

This report presents the conclusions and recommendations of the consultants retained to design a permanent Canadian public address postal coding system. Following this synopsis (Section 1) the detailed report contains six sections. Each is briefly outlined below, with the intention of providing an executive overview of the outcome of our study.

SECTION 2 After reviewing the scope of our assignment and the consulting approach taken, we present the results of the field work, involving every District and autonomous Post Office in Canada. Each was visited by members of the Study team. As an essential pre-requisite to coding a national system, we collected significant data about the system, and the requirements of operational and other users. Discussions were held with large volume mailers. A computerized data file was created and analytical programs were written and used, to provide a quantitative picture of national mail distribution patterns. The nature and contents of the data file are summarized, and selected computer print-outs are included as Tables.

SECTION 3 The need for postal coding is established. The required features of a national system designed to meet the essential operating needs of the Canada Post Office, and the stated requirements of other important "non-operational" users, are discussed.

1. SYNOPSIS AND MAJOR RECOMMENDATIONS (cont'd)

.1 (cont'd)

The major operating problem is shown to be the City or inward sortation of mail for distribution to customers.

The factors affecting the design of a postal code, including the relative importance of brevity; comprehensiveness; public acceptance and familiarity; numeric or mixed alpha-numeric groupings; are discussed. A code is a compromise; trading off one priority against another one.

Section 3 is concluded with an analysis of the feasibility of incorporating existing city zone numbering schemes into the recommended postal code. In our opinion, present city zone numbering schemes represent an unsuitable basis for defining and coding a national, or even a regional, system. Existing zone numbers should be phased out as the new national code is implemented From our studies, we conclude that present city zoning schemes do not fully satisfy the Department's operating needs and would not aid mechanization, or meet any of the requirements of "non-operational" users.

SECTION 4 The definition of the elements in our proposed Postal Address Code (PAC) system, is related directly to the "Forward and Local" structure of the national postal system. The logic of the recommended format for a uniform, six-character postal code is presented. For example:

T27 DP6
WR3 AL4

The first three positions, i.e., T27 or WR3 in the examples above, designate a "Forward Sortation Area"(FSA) and the last three positions, i.e., DP6 or AL4, identify a "Local Delivery Unit" (LDU). These terms are defined, and the code flexibility and capacity for growth are discussed.

1. SYNOPSIS AND MAJOR RECOMMENDATIONS (cont'd)

.1 (cont'd)

The recommended assignment of significant letters or numerals in specific code positions, is based on the "ranking" of various geographic areas, according to their significance within the national postal system. "Ranking" is based on the volumes of mail generated and received, and also on certain transportation and geographic factors.

The applications and advantages of the code are presented, and within the over-riding interest of public acceptance, especially by large volume mailers, the recommended code design meets all the Department's essential operating needs and satisfies many of the requirements for "non-operational" users.

SECTION 5 — As required by our terms of reference (see Appendix A) we propose a plan for implementation. A CPM network diagram is included as Exhibit VII. The plan is based on a phased implementation, related to the operational priorities and the rate of procurement of the necessary code-marking and sortation equipment.

The organization and staffing considerations, staff training, and the potential impact on postal employees, will be of paramount importance. One other critical factor necessary to ensure success, is a high level of public acceptance. We propose some methods by which this may be promoted, with emphasis on large volume mailers, and we present brief guidelines for support and on-going maintenance of the national coding system.

SECTION 6 — The benefits of a "streamed" street letter box mail flow are discussed, because of its relevance to mechanization and reducing sortation time and labour costs in city offices. Also, by evaluating the effect of "streamed" mail flow, we are able to

1. SYNOPSIS AND MAJOR RECOMMENDATIONS (cont'd)

.1 (cont'd)

present to the Department a more comprehensive cost/benefit analysis. Our cost/benefit analysis is not intended to be fully definitive - it was beyond our terms of reference to study the economic implications of coding and mechanization - but we conclude from our estimates that substantial economies would be available, assuming competent implementation and effective supervision in an operational environment.

The implementation of coding and mechanization will significantly reduce, but not eliminate entirely, the knowledge requirements for sortation. The impact of coding on manual sortation is summarized.

SECTION 7 Our report concludes with an acknowledgement of our indebtedness, as consultants, to those many sources of help who were in large measure responsible for the coverage and support we were given throughout our study.

A number of diagrams and maps to illustrate the principles of our coding concepts, and tables of volumes and other data, are submitted as integral parts of our report. Other working papers, and computer programs, remain in the custody of the Department.

.2 Summary of Recommendations

An extract of our major recommendations follows; others of secondary importance have been left within the body of our report. To assist the speed-reader, and for emphasis, each recommendation in the report has been "boxed" to make it stand out within the context of its appropriate subject.

1. SYNOPSIS AND MAJOR RECOMMENDATIONS (cont'd)

.2 (cont'd)

We recommend that:

(Page 25) Existing city zoning and zone numbering schemes be retained only up to the time that they can be superseded by the introduction of the Postal Address Coding (PAC) system described in this report.

(Page 28) The Canada Post Office adopt a permanent public address postal code that identifies both the FORWARD and LOCAL elements of the national sortation and distribution system.

(Page 31-32) A 6-character, uniformly structured, alphanumeric, code in the format:

ACx AAx

be adopted as the public address postal code for Canada.

(Page 40) Each Post Office should be assigned a unique 6-character code number within the uniform structure of the proposed PAC system; use of the numeral 0 (zero) in the final position of the code should be reserved exclusively for assigning numbers to Post Offices.

(Page 47) Implementation of the PAC system should be a phased program, geared to precede the procurement of code-marking and mechanized sortation equipment.

(Page 51) An initial test area should be selected in accordance with criteria set out in our report, as the first area to be coded; to be followed by implementation, in parallel, for the Toronto and Montreal areas.

(Page 54) A "Coding and Mechanization Task Force" be set up to carry out implementation of postal coding and the installation of mechanized equipment: the Task Force should be headed by a senior executive reporting on a direct and regular basis to the Departmental Planning Board.

2. REVIEW OF ASSIGNMENT

.1 Background and Earlier Studies

Some five years ago the Post Office Department, recognizing the need to study improvements in the postal system, established a "Committee On Distribution Evaluation" (CODE). This Committee first met on October 9, 1964, and suggested terms of reference as follows :

> "To evaluate the present distribution processes and patterns now existent in the areas of zoning, coding, terminal sortation, mail flow patterns and transportation in Canada."
>
> "To determine and recommend possible improvements in these areas."

In January 1966, the Committee presented a First Interim Report that identified :

- the information that a national postal code should convey
- what such a code could accomplish
- how it could be used.

After many further meetings, and much devotion to analyzing the problems involved for all potential users, the Committee's Second Interim Report was presented in January 1967. This report dealt with the operational considerations, code capacity and related code developments. It proposed certain principles for national adoption, and recommended further studies and the establishment of technical and advisory committees. One conclusion of the Committee was that there was little immediate need for a national postal code, and they emphasized the inherent dangers of proceeding too hastily with code implementation.

The CODE officers reviewed many coding, zoning and mechanization schemes introduced by the postal administrations in other countries. With one exception, the postal codes of other nations may be classified as "Forward" codes, i.e., codes designed to

2. REVIEW OF ASSIGNMENT (cont'd)

.1 (cont'd)

identify a specific Post Office destination, or a postal zone within a large city, to which mail is directed. The U.S. ZIP Code is a familiar example of a "forward" code.

One noteworthy exception in international postal coding systems is the code that was designed, and is now in an advanced stage of implementation by the British Post Office. It identifies two essential elements of postal operations:

- an Outward (or forward) code element, identifying an area of the country and geographic sub-divisions of that area: in British terminology this is a "machine town"

- an Inward (or city or local) code element identifying a small portion of a postman's route or the address for a large volume (business) mail receiver.

The Postcode system in Britain was introduced to the Norwich area in 1961 on an experimental basis: the British anticipate that virtually full national Postcode coverage will be achieved by the end of 1970.

.2 Scope of Study and Consulting Approach

The Department's terms of reference for this study are set out as Appendix A. In our proposal dated June 1969, we submitted our appreciation of the problem and outlined our consulting approach to postal code design and implementation. Our approach was based on the concept that a code is not an objective in itself, but rather a logical classification of a "system". It was therefore appropriate, in our opinion, to attempt to define and quantify "the system" governing the operations of the Canada Post Office.

Having defined the scope of the national postal distribution system, identified its elements and collected some relevant cost data during our field work, we were better equipped to:

2. REVIEW OF ASSIGNMENT (cont'd)

.2 (cont'd)

- define the information that a code should convey
- evaluate the impact of coding on elements of the postal system
- calculate measurable costs and benefits
- justify our recommendations with supporting factual data
- determine the priorities, and design a plan, for implementation and maintenance.

In addition, we deemed it essential to gain an understanding of the requirements of large volume mailers, the "non-operational" needs of the Post Office, and the interests of other users and other government departments in the application of a national postal address code.

In our proposal we suggested certain "models" upon which to test our concepts, and we proposed to have a number of discussions with U.S. postal authorities regarding the use of mechanization and optical character recognition (OCR) techniques. In fact, we substituted for U.S. experience, a closer study of techniques being implemented in the United Kingdom, and our model was changed and greatly extended to give better coverage of the Canadian postal system.

.3 The Field Work and Data Collection

The first objective of the study team was to identify and evaluate the essential needs of the operating service for a postal coding system. This task was divided into four tactical areas which comprised the field work phase of the study, namely:

- to identify the various processing operations related to "product lines" in a representative sample of offices, and to calculate the direct labour content of each step;

2. REVIEW OF ASSIGNMENT (cont'd)

.3 (cont'd)

- to discuss with District Directors and Postmasters their operating problems and how coding might affect them, and to examine sortation practices and operations in several key offices and a number of smaller ones;

- to quantify the "national distribution system" and create a data bank containing mail volumes and other relevant information;

- to meet with a cross-section of large volume mailers, government departments and other potential users of a public code; to understand their views and requirements and to identify the type of assistance they would expect in accepting a public postal code.

.1 Mail Processing Operations

The four "product lines" referred to throughout this report are based on physical characteristics, and not class of mail:

- short and long letter mail (S/L letters)
- flats (including oversize letters)
- parcels over 2 lbs. or 150 cu. ins.
- packets (articles which do not fall into the other categories above).

Eight offices out of approximately 252 letter carrier offices in Canada, were selected as being representative of processing operations in large, medium and small plants. Included were those processing plants responsible for handling the greatest concentrations of mail as shown in the list below. The national ranking indicates the relative importance of each office within the national system:

2. REVIEW OF ASSIGNMENT (cont'd)

.3 .1 (cont'd)

Post Office	National Ranking by Total S/L Volume Processed
Toronto	1
Montreal	2
Vancouver	3
Winnipeg	4
Victoria, B. C.	15
Ville de Laval, P.Q.	26
Brantford, Ont.	38
Brandon, Man.	70

A flow chart of mail streams in a "typical" large Post Office was prepared showing the processing elements, and this is attached as Exhibit I. Using this profile, we analyzed the Direct Labour Hours based on pre-determined time standards, flow test data and reported performance figures, to calculate the Direct Labour Hours per operation per product; the direct unmeasured hours were reported separately.

A "typical" analysis of the Direct Labour Hours, for the Montreal office is included, see Table 1.

In the offices visited, more than 50% of the total hours worked are required to process a single "product line" - the S/L letters. For example:

Post Office	Hours Worked on S/L as a Percentage of Total Hours Worked
Toronto	66% (including some flats in the "geo" sort)
Montreal	58%
Ville de Laval	71%

The operations involved in sorting S/L letters make this the most labour-intensive operation per product line in a "mail processing plant".

2. REVIEW OF ASSIGNMENT (cont'd)

.3 (cont'd)

.2 Discussions with Field Staffs

Intensive discussions were held with every District Director and autonomous Postmaster and their staffs; and with officers in London, Brantford, Hamilton, Windsor and Victoria. We sought their interpretation of operating problems and some insight into how coding might affect Forward and City sorting operations.

Sortation practices and operations were examined in a number of representative offices both large and small to help the team become generally familiar with operating practices and in particular, the rationale underlying the identification of "straights" within present sortation schemes.

.3 Identifying the National System

The problem that faced the study team was "What system requires definition and coding?" Should we code all the cities and towns of origin or destination, the postal stations and depots, letter carrier walks, points of call, transportation routings, the Distributing Centres, map grid references or some other, more suitable, element?

The team determined that the most useful definition of the national system could be expressed in terms of volumes processed. More specifically, the annual volumes of S/L letter mail originated by an area, the volume received by an office from other points in the national system for local distribution, or volumes exchanged by an office with the national system.

Our principal analyses were based on recorded volumes of first and third class short and long letters for the year ended July 31, 1969, classified as follows:

Local Originating: mail originating in an office's delivery area having a destination in the same area. Such mail has

2. REVIEW OF ASSIGNMENT (cont'd)

.3 .3 (cont'd)

no direct impact on the national system, because it never enters the national distribution network, except to be sorted in the originating office.

Forward Originating: mail originating in an office's area, destined for other points in the national system. This volume represents the amount of mail that an office puts into the system, and is an indicator of its relative influence on the system.

Local Incoming: mail originating in other offices but destined for distribution locally. This volume represents the minimum amount of mail that an office receives from the national system, and hence indicates its relative dependence on the system.

Forward Transit: mail flowing into an office from the national system, to be sorted and transferred for distribution by other offices. The volume of this traffic is some measure of an office's role in the network for bulking and re-distribution of mail, i.e., a Distributing Centre. Transit traffic need not necessarily be sorted in the offices where it now appears. More mail could be routed directly to its destination, with less handling, through the use of a Forward code.

We concluded that such data for every Distributing Centre, whether it be implemented, planned or proposed(1), plus every major letter carrier office in the country would give a valid profile of the system. Our data collection program was conducted accordingly, and the information fed into a computer file.

Our statistical coverage of mail volumes by area and offices embraces approximately 60% of the total Canadian population, including all the metropolitan areas, and covers about

---

(1) The status of the Post Office Department's program for implementing the Distributing Centre concept, as at March 31, 1969, was:

- in operation: 114 centres, serving 4,750 dependent offices
- in various stages of planning and authorization: 90 centres covering 3,185 dependent offices.

2. REVIEW OF ASSIGNMENT (cont'd)

.3 .3 (cont'd)

80% of the total urban population. In terms of offices, it includes volumes for 197 Distributing Centres (all D/C's except for RPO's and some very small offices, e.g., Cache Creek, B.C., which serve only as "transfer points" in a national transportation system), with and without letter carrier service; and offices administering approximately 90% of the letter carrier walks in the country. The number of walks in the offices excluded varies from 4 to 29; most have between six and ten walks.

After comparison of the collected originating volumes with other Headquarters data, we conclude that our "data bank" covers better than 93% of the national total originating S/L letter mail. The coverage is summarized below:

	Pieces (millions)
First Class Mail Reported (2)	2,378
Third Class Mail Reported (2)	1,375
	3,753
Total Originating Mail, as per Coding Study Data Collection	3,520

A "data bank" consisting of the considerable amount of information collected during the field work, was created on computer tape. Programs were written to analyze and display this data by office and by District, to give what we conclude is a very valid profile of the national system. Examples of the print-outs are presented as Tables 2 to 6. A complete set of tabulations, and the programs, are in the custody of the Department for future use.

---

(2) Reference : Post Office Department "Cost Ascertainment Report for the Year ended March 31, 1969 - Comparative Statement of Total Sales and Costs". These figures include some oversize letter mail, which is excluded from the study team's data, but which would not materially affect the "ranking" of offices if it were included.

2. REVIEW OF ASSIGNMENT (cont'd)

.3 (cont'd)

.4 Discussions with Large Volume Mailers (LVM's) and Others

Interviews with a representative cross-section of national LVM's were arranged, to obtain their views. In line with the Department's new marketing approach, and because of the important relationship between the Post Office and its larger customers, we considered it essential to understand their particular requirements, their reaction to various coding alternatives, and the assistance and continuing support they would expect in implementing large address-file conversions and using a postal code on labels and envelopes.

The industries and large customers contacted (see Appendix C) responded generously to the study team's approach. In addition to the LVM's, a number of interested parties took the trouble to submit suggestions, or coding ideas. In most cases, the ideas were for "ZIP-type" codes or geo-coordinate grid systems. Both of these code types were judged to be inadequate for the needs of the Canada Post Office.

.4 Review of British Post Office Experience

Following our field work, and having reached our own tentative conclusions regarding the coding needs for a Canadian system, we considered it appropriate to test our concepts before finalizing the code structure. In our proposal we had suggested the U.S. Post Office Department as the appropriate "sounding board", but as a result of our subsequent understanding of the operating needs of Canadian users, we decided that it would be of much greater benefit to draw mainly upon the experience of the British Post Office (BPO).

We were given the opportunity of analyzing the results the BPO has achieved by coding and mechanization, and testing our own concepts, during a most valuable visit to Canada by a senior official from London - Mr. David Stewart, the Head of the BPO's Postal Coding Branch. Although the structure we recommend differs in significant details from the British Postcode, we would be remiss in not acknowledging our indebtedness to Mr. Stewart, and our recognition of the accomplishments of the British Post Office in this area.

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS

.1 The Need for Postal Coding

The fundamental question regarding the necessity or desirability of some form of postal coding was answered many years ago in Canada, and in most other advanced postal administrations, with the recognition of a need for zone numbering in large cities. A number of countries have since introduced full national coding systems.

Postal coding is not an end in itself. The fundamental justification for postal coding, in our opinion, and as implied by the Post Office in the terms of reference for our study (see Appendix A, paragraph 2), is to contribute to improving the productivity and standards of postal service, primarily through effective mechanization. Optimum utilization of mechanized systems and, later, of more automated systems, will depend to a significant degree on the availability of a viable postal address code, widely accepted and used by mailers.

Important secondary needs for a national postal address code arise from the value to be derived by large customers of the Post Office, other government departments, and other potential users. For example:

- Direct mailers, publishers and other large volume mailers (LVM's) need to be able to self-sort their mail effectively, preferably with reduced knowledge, and based on a uniform and permanent national scheme. Sorting by code is a particularly valid technique for computerized systems, where large files of address records could be sorted on the computer prior to print-out of labels or envelopes, eliminating the need for physical sortation after printing.

- Government Departments such as DBS and the Taxation Division of National Revenue, and the users of statistics published by such agencies, have stressed a need for a national system that would facilitate statistical analysis and correlation of postal addresses with population statistics, provincial/municipal divisions, and economic or marketing areas. Existing postal zone numbers are generally considered to be unsuitable by such users (zoning applies only to

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.1 (cont'd)

larger cities, and schemes have been changed too often). Many mailers require more precise knowledge of the area served by each Post Office than the office name alone gives.

The objectives of postal coding should include, in our opinion, an attempt to meet certain "non-operational" needs as effectively as possible and at no additional cost to the Post Office. Coordination between government agencies, including the Post Office, with the objective of ensuring that common requirements are met and duplication of effort minimized has, we consider, been inadequate. A well-designed national Postal Address Coding (PAC) system, accepted by the public, by large volume mailers and by government agencies at all levels, would contribute significantly to improved national data collection, statistical reporting and analysis.

Evidence of the "fringe" benefits of ZIP-coding for marketing and the Bureau of the Census in the United States has been published (3), and we have no reasons to doubt that similar or greater benefits would accrue to Canadian users.

.2 The Required Features of a National Postal Code

The principal operating problem in major centres is the inward or City sortation of mail for local distribution. Forward distribution also constitutes a major problem, but of a different type.

> Fundamental to the needs of the operating service is that: a Postal Address Coding (PAC) system must identify both the Forward and City (or Local) elements of the distribution system.

---

(3) References: "New Developments in Zip Code Marketing" by Richard W. Jones, U.S. Post Office Department (printed in "Sales Management Magazine" - June 1969).

"Zip Code Selection Techniques Applied to Mail Order Lists" by Albert R. Young (printed in "Direct Marketing").

"ZIP Code-Bonus for Business" by Frederick C. Belen, Deputy PMG of the U.S. Post Office Department (printed in "MSU Business Topics" - Spring 1967).

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.2 (cont'd)

The crux of the City sortation problem in the larger urban areas is the "unstable" nature of the local distribution pattern, due to the frequent re-structuring of letter carrier routes. In this context, the city zone is unsuitable, because zoned mail still requires, ultimately, a "knowledge" sort to the carrier walk. In our opinion, stabilization can only be achieved by adopting a basic sortation unit, or indivisible building block, more suitable than the letter carrier walk or the city zone, or the Postal Station.

In contrast to the city distribution, Forward sortation schemes and related distribution knowledge, are relatively stable on a national basis. However, the gradual relaxing of sorters' qualifying examinations has eroded this "knowledge base" among postal clerks throughout the country, with the result that "out-of-province Dis. knowledge" has significantly diminished. Much of the out-of-province mail formerly sorted to the equivalent of the Distributing Centre, using "Dis. knowledge", is now bulked onto the major or nearest terminals in other provinces, e.g., Toronto, Montreal, Winnipeg or Vancouver, for finer sortation. These "bulked" mails therefore aggravate conditions in already congested sorting plants. In effect, the despatching offices "export" their sorting problems to the terminals. The mail involved also requires extra handling in the process of distribution.

In addition to the basic requirements of the operating service, defined above, other required features of a national postal code include :

- The code must be an aid to mechanization, without having any unfavourable effect on manual sorting schemes on a national basis. Whether the code is used or not for manual schemes, would depend on the benefits derived, but the needs of a mechanized system should not be subordinated to the requirements of a manual system. To meet the requirements of manual sorting, use of a code must reduce the knowledge requirements in both Forward and City distribution schemes.

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.2 (cont'd)

- Code length should be as short as possible. Discussions with LVM's indicated that six characters would be acceptable but seven or more would make coding an unattractive proposition for reasons of: space in computer files, address plates, added key strokes by coders, scanning time, etc. Also, the error rates tend to increase if code brevity is sacrificed to satisfy other features, and long codes are more difficult to remember.

- The code must achieve a high degree of public acceptance. It is obvious that, regardless of the technical excellence of any code design, a low rate of public usage will render it useless as an operational tool. The best "incentive" to mailers for using the code would be a demonstrated assurance on the part of the Post Office that standards of service could be consistently attained or improved for the overwhelming majority of customers. We have concluded that mailer acceptance would be most effectively aided by keeping the code short and uniformly structured, by assisting the LVM's to convert their records, and by adopting other methods outlined later in this report (Section 5.4). We recognize that the possibility of a relatively few customers experiencing some service deterioration does exist.

- The code should be applicable to all types of mail - letters, flats, parcels and packets - and to any type of customer delivery service - letter carriers, lock boxes, rural routes, general delivery, and mobile or parcel post couriers.

- The code is required to have the characteristics of permanence, flexibility to accommodate change, and adequate capacity for growth. A minimum "system life" of 30 years should be assured.

- The Post Office Department's administrative numbering requirements should be compatible with, and preferably an integral part of, a uniform postal coding system. This is particularly relevant to the renumbering of offices for the Money Order and Management Information Systems.

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.2 (cont'd)

- The code should minimize error potential and facilitate error detection.

- The Canadian postal code format should be internationally unique, to avoid any confusion with code structures used by other postal administrations - particularly the U.S.

Some LVM's, government departments and others, identified requirements and in some cases constraints, that would not necessarily be compatible with operational code requirements. We concluded that the following features could be built into a code structure :

- recognition of important boundaries and political or economic "modules" within Canada : e.g., provincial/municipal boundaries and census tracts

- a facility to aid correlation of the postal address to published statistics, usually based on DBS census tracts, for purposes of market analysis

- a facility to permit greater selectivity when choosing and analyzing markets or statistics for a user-specified area, whose boundaries do not conform to existing standard delineations.

.3 Factors Affecting Code Design

A code is a compromise : in a complex system it is rarely feasible to have a practical code that would be "all things to all users". In the preceding section we established the information that a code should convey. The technical design factors considered in resolving how these requirements would best be met are outlined below. In evaluating the importance of the factors impinging on code design, two guidelines were accepted as being of critical importance :

.1 That the greatest "weight" should be assigned to

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.3 .1 (cont'd)

essential operating needs.

.2 That code effectiveness would depend on a high degree of public acceptance being attained.

These principles were useful in dealing with conflicting priorities, "trade-offs" or incompatibilities among the following factors germane to code design:

- code length
- spare capacity for growth, flexibility to accommodate change
- the use of numeric, mixed alphanumeric combinations, or all-alpha character groupings; and the extent to which a character or group can be related to the original, e.g., "T" to signify Toronto, "M" for Montreal, and so on
- uniformity of structure, i.e., a standard length and, in a mixed alphanumeric group, a fixed assignment of either a letter or a number to any one position
- the use of symbols, such as the dash or oblique stroke, or the use of a space, to identify distinct portions of a single code
- the extent to which existing code schemes, that may be established and familiar to the public (whether designed for postal or other purposes) should be incorporated
- the extent to which error detection features can be included without adversely affecting the code length or coverage.

In the context of the identified postal code requirements, most of the familiar code schemes are generally irrelevant. Such systems as telephone numbers, point location codes or geographic classifications, have serious design drawbacks. A discussion of the relationship of the proposed code to existing and familiar non-

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.3 (cont'd)

postal systems, is presented later in Section 4.6 of this report. However, the reader should first direct his attention to our recommended code format, its operating applications and advantages, presented in Section 4.2.

It is appropriate at this point to examine the particular design considerations related to the feasibility of incorporating the existing postal zoning system into a new and more comprehensive code.

.4 The Feasibility of Incorporating Existing Zoning Schemes

We examined the feasibility of the present postal zoning system being continued as part of the proposed postal coding system. Our terms of reference (see Appendix A, paragraph 4) specified only the present 3-character system, i.e., the zoning schemes in Toronto, Montreal and Vancouver. We extended our review to include the remaining eight zoned cities.

The present policy, and the criteria for the zoning of city delivery areas, are set out in Postal Service Branch Directive No. 414-7-2 of February 7th, 1968. A temporary suspension of all zoning plans has been in effect since May 1969, pending design of a postal code (4).

At the commencement of our study (July 1969) the status of zoning in Canada was :

3-character Zoning	No. of Zones in Use	
	City	Perimeters
Montreal	146	44
Toronto	128	111
Vancouver	180	57
	454	212

(4) Reference : Telex message dated 23rd May 1969 from the ADPMG-Operations to all Direct Directors and autonomous Postmasters.

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.4 (cont'd)

2-character Zoning	City Zones
*Quebec	9*
*Ottawa	13*
Hamilton	37
London	34
Windsor	25
*Winnipeg	22*
Calgary	25
Edmonton	50

*NOTE : Quebec, Ottawa and Winnipeg were "casualties" of the zoning moratorium, and the numbers of zones shown in the above table are for the "old" (i.e., pre-1968) schemes. For example, it had been planned to introduce, for Ottawa during 1969, a revised system of 57 zones to replace the 13 zones now in use.

Following a detailed evaluation of the city zoning schemes, it is our firm conclusion that the existing zone numbering system should not be designed into any national postal code, for the following reasons, each of which is then discussed in greater detail :

- there are too many zones in the "3-character" cities to allow meaningful (i.e., direct) separations

- preserving the present 3-digit zone numbering system would require the adoption of a postal code having a minimum of seven characters for Montreal, Toronto and Vancouver

- the present city zones are, on average, too small to serve as city "despatching units", i.e., to assume the role of the letter carrier depot

- the methods by which the present system handles growth incorporate, in our opinion, poor code design features.

Too Many Zones. It is obvious that for Montreal, Toronto and Vancouver a one-pass manual sortation, using a 120-separation

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.4 (cont'd)

case, could not separate every city zone. This observation would also be applicable to mechanized sortation, where the number of machine separations may be greater than the number of separations in a manual case, but in all likelihood still considerably short of the capacity needed to complete the job in one machine pass. Thus, the direct benefit of present zoning as an aid to sortation and improved productivity is difficult to define.

Similarly, the potential benefit of having other offices sort to zones for these three cities, at the originating offices, is nullified. For example, if offices such as Edmonton, Calgary, Winnipeg or Halifax, and large volume mailers carrying out self-sorting, were to attempt to sort Forward mail by each zone for the three largest metro areas in Canada, the sorter would be faced with the possibility of sorting to over 650 separations!

Obviously, this number of separations is impractical. Nevertheless the Post Office requires that LVM's make these separations in order to enjoy preferential rates for bulk mail. Volumes for many zones are now, and would continue to be, too small to separate and bundle, so this mail gets consolidated into "City bags" for rehandling by the destination offices.

A Seven-Character Code Length. For Montreal, Toronto and Vancouver, where code brevity would have the most beneficial effect, seven characters would be needed to satisfy the operating requirements identified earlier.

The seven characters would be required, in order to identify:

- the zoned area, i.e., the particular metropolitan area to which the succeeding three numerals apply; one character would be needed for this
- the zone number: three digits
- a suitable delivery "unit": our studies show that this could not be accomplished with less than three characters, allowing for adequate growth capacity.

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.4 (cont'd)

The maximum number of local delivery units that can be expressed by a 2-character grouping would be approximately 900, and our studies revealed that this total would be inadequate if the operating requirements, as we have defined them for City sortation (see Section 3.2), are to be met by coding. Also, the design criteria presented in an earlier section, would be compromised in several ways that would be, in our opinion, very undesirable :

- code uniformity on a national basis would be destroyed by having 7-character codes in Montreal, Toronto and Vancouver and 6-character codes for all other areas : the alternative would be the inclusion of one redundant character in codes for other areas to preserve uniform code length

- code brevity would be sacrificed in precisely those areas where it should have the greatest beneficial effect : a 7-character code would add one sixth to the scanning, keystrokes and print positions required by all users in those cities that generate and receive the greatest volumes of mail.

The Zone as a City Despatching Unit. Toronto, Montreal and Vancouver have an average of 6.4 letter carrier walks per zone. Letter carrier walks now, and probably for some time to come, will continue to cross existing zone boundaries, under present schemes. The purpose of City sortation is to consolidate and direct mail to the letter carriers (or other delivery modes) : it has not been successfully explained to us how the present zoning scheme can contribute to this local distribution function.

Methods of Handling City Growth. With the present zoning systems (which in some cities represents the third "generation" of numbering schemes within a span of 25 years), growth or more accurately increasing population density, would have to be handled by using one of three techniques :

- by subdividing the zone into segments and assigning a new number to each new segment

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.4 (cont'd)

- by "overlaying" a new zone number for an area, resulting in a mixture of two or more "forward code" numbers in the one area, as is done with telephone exchange numbers in metropolitan areas

- by delineating "islands" within a zone, and assigning new numbers as required.

Each method could require a code change or addition for at least part of the area now included in a zone, and this, in our opinion, would represent a poor design feature with regard to flexibility and capacity for growth.

From our analysis of the present zoning schemes, we reached the firm conclusion that factors such as those outlined above are sufficiently critical to justify the rejection of city zoning schemes as an element in the design of a postal address code.

We therefore recommend that:

- existing city zone numbers not be incorporated in the design of any new national code

- existing city zoning and zone numbering schemes be retained only up to the time that they can be superseded by the introduction of the Postal Address Coding (PAC) system described in this report

- no interim changes be introduced, and no further general promotion or publicity should be given to existing schemes.

Obviously, LVM's should be kept updated on existing schemes, in order that they may continue to benefit from preferential rates.

3. CODE REQUIREMENTS AND DESIGN CONSIDERATIONS (cont'd)

.4 (cont'd)

As a final point, Canadian public acceptance of present postal zoning schemes has not been overwhelmingly high. If a 70% "acceptance rate" were being consistently attained, i.e., 70% or better of the mail now destined for zoned cities included the zone number in the address, this may have offset some of the reasons given above for rejecting the present zoning schemes. In the U.K., by contrast, the familiar London postal zone numbers (e.g., S.W. 3 or E.C. 1) appear in more than 93% of addresses destined for London delivery, and for this reason the BPO have opted to incorporate the existing London zone numbering into their national Postcode - sacrificing code uniformity or brevity to do so - i.e., the Postcode may be 5, 6 or 7 characters in length, with an "unstructured" format of alphabetic or numeric characters in the Forward positions of the code; for example:

E1 2AB	(London, E.1)
NOR 4DD	(Norwich)
EH12 6HH	(Edinburgh)
SW22 7AR	(London, S.W.22)

We conclude that, for the Canada Post Office and the mailing public, such a compromise with uniformity would be undesirable and without significant advantage, since it would not promote familiarity or code brevity.

4. THE RECOMMENDED CODE STRUCTURE

.1 Structure of the National Postal System

In its simplest form, taking into consideration only the needs of the Department's operating service, there are two elements to the national postal system. These are the FORWARD and the CITY (or Local) elements of the mail sortation and distribution network.

The Forward operation processes the mail originating in one city or area, for delivery within another city or area; this volume may be augmented by Transit mail being handled by a Post Office, en route between the offices of origin and final destination. It is this exchange of mail between offices via the Forward distribution network, that is incorrectly referred to by many as "The National System". However, City (or local) distribution is also an essential part of the national postal system.

The City (or - to use a term we have preferred in our code design - the Local) distribution system processes mail that, irrespective of whether it originated in the same city or is incoming from elsewhere, is destined for delivery to customers in the area covered by that office's delivery services. As pointed out earlier in this report, the major operating problem is in the Local part of the distribution system.

The Forward element of a postal code should, therefore, identify the "Forward area" within which sortation to delivery modes, i.e., letter-carrier walks, rural routes, lock boxes, etc., takes place. The "Local delivery" element of a postal code should identify a portion of a delivery mode, within a particular "Forward area".

In classifying such a system through the mechanism of a code structure, the "Local" code element cannot stand alone - it must be combined with a "Forward" code element. Similarly, a "Forward" code element is, by itself, only an incomplete expression of part of the whole system. The only example of a "Forward-Local" code that has been implemented is, to our knowledge, the British Postcode system. The U.S. ZIP code is essentially a Forward code - no delivery module smaller than a city zone can be identified.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.1 (cont'd)

Identification of both the Forward and Local distribution elements is an essential part of defining the national postal system in Canada. It was an objective of our field work to identify and define each element, and to quantify the mail flow volumes associated with both Forward and Local sortation, in order to fully understand the implications of coding upon each step in the mail distribution system.

We determined that the introduction of a Forward-only code would offer the Post Office and other users very limited benefits :

- a Forward-only code would have no impact on Local sortation, a process that absorbs approximately 50% of all Direct Labour Hours used on S/L letter sortation processes; it is Local (or City) sortation that is the main operating problem in the major centres

- a Forward-only code would be essentially incompatible with the identified requirements of "non-operational" users.

> We strongly recommend :
>
> - adoption of a permanent Canadian public address postal code that identifies both the FORWARD and LOCAL elements of the national sortation and distribution system.

.2 The Recommended Code Format

Our concept of a compound code incorporating both Forward and Local elements requires careful definition and selection of the most suitable "units", of each element.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.2 (cont'd)

We examined, thoroughly and critically, existing "units" that might possibly serve as a readily available and publicly familiar basis for coding. The alternative "units" and options examined and evaluated fall into two categories:

.1 Those codes that identify an area: examples of this type include:

- the telephone number system for area codes and local exchange numbers
- municipalities or census tracts
- the letter carrier walk, the rural route, or the areas covered by other modes of delivery service
- the Post Office Department's walk-evaluation "block" or the DBS census enumerator's "blockface".

.2 Those codes that identify a named point or specific location, examples include:

- the Distributing Centres and other Post Office locations
- location codes of several types, such as the DBS standard geographical classification, allocated and unallocated numbers in the U.S. ZIP-code series, and the transportation industry's Standard Point Location Code
- the various forms of geographic coordinate coding ("geocoding") based on the Universal Transverse Mercator grid system or similar concepts.

Our conclusion is that none of the above systems meets the specified needs of postal operations or the requirements of other potential users of a postal code. The main reasons for rejecting the existing city zoning schemes were presented in section 3.4

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.2 (cont'd)

above. Our reasons for rejecting other alternative code systems (Section 4.6), as a foundation upon which to structure a postal code, may be more clearly understood when the reader has been presented with our recommended format, which follows.

Accepting a two-part structure as a valid expression of the national system, with both elements interdependent, it is obvious that:

- each "Forward area" would consist of an aggregation of "Local units"

- the "Forward area" would represent the basic sortation scheme in the Forward section of a processing office, and should be clearly identifiable from the postal code

- the "Local unit" should represent the lowest common denominator of the system, i.e., the basic, indivisible module to be coded.

The two essential elements to be built into the code, as we have defined and named them, are:

- the Local Delivery Unit (LDU): this would be the basic building block of our concept, and the unit used for City sortation

- the Forward Sortation Area (FSA): this would be an aggregation of LDU's, and the unit used primarily for Forward sortation purposes.

The Local Delivery Unit (LDU). The LDU would be the basic coding unit - defined as "the largest indivisible delivery module". It would be the module that identifies:

- a portion of a letter-carrier walk or rural route

- a "large volume" receiver (a business or other institution - but never an individual addressee)

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.2 (cont'd)

- a group of lock boxes, a Post Office, etc.

It would represent a delivery unit that would not be split up in restructuring delivery routes, or sub-divided unless there were physical changes in the identified piece of territory. For example, if single residences on a street or part of a block were demolished to make way for a high-rise apartment, there would be a coincident change of address involved, and this could be a valid reason to change the LDU. "Typical" guidelines for the definition of LDU's are set out as Appendix D. These would need to be more fully developed and improved at the commencement of implementation.

The Forward Sortation Area (FSA). The FSA would be a logical grouping of LDU's. The FSA code would delineate a finite area within the national postal system, and need not identify places, in the customary sense of locations such as cities, towns and villages. Careful delineation of the FSA's would be critical to code permanence, and maximum code "protection" of this element would be a factor in implementation.

It is, in our opinion, more important to assign code significance and priorities on the basis of systems analysis, than on political/municipal sub-divisions or the present postal administrative units. Obviously, in delineating FSA boundaries - one of the primary tasks of implementation - due consideration must be given to growth and density projections, and to such matters as the "mix" of apartments, businesses and residential units in any area.

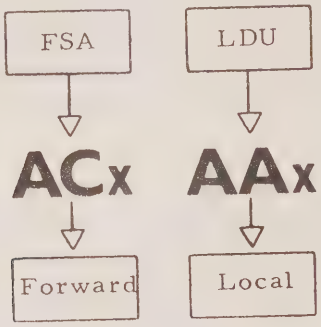
We recommend that:

- the Canada Post Office adopt a 6-character, uniformly structured, alphanumeric, public address postal code.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.2 (cont'd)

The recommended code would consist of two elements, with three characters assigned to each of the two elements - indicating the FSA and the LDU. The format of the code would be as follows :



Where : A = an alphabetic character

C = an alphabetic character or a numeral

x = a numeral

Typical examples of the proposed code format would be :

M27 HK3
WR4 XG1

We recommend that the code always be written with a single space between the two 3-character groups. The code format should not be hyphenated, and no use should be made of other symbols or punctuation, such as the oblique stroke or colon. Adding a space between elements does not make the code into a 7-character structure.

In computer-based records the six characters may be "packed" together, and the extra space provided only in the print positions. We appreciate that, for users of address plates and other direct imprinters, seven spaces would be required. In this regard it would be, in our opinion, of significant help to mailers if the Department were to approve for general use the standard abbreviations of Post Office names, and 2-letter abbreviations for

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.2 (cont'd)

Provinces. For internal use, e.g., with the MIS and Money Order systems, the code may be packed into six positions without spacing.

Ultimately, with full acceptance of a public code - when all but an insignificant part of the total sortation could be based on coded mail streams - it may be superfluous to indicate the Province, or even the place or Post Office name, in a coded postal address.

The only position in the 6-character code format that would be alphanumeric, would be the centre position of the FSA (Forward element). Each of the remaining positions would, we propose, be fixed as either numeric or alphabetic, i.e., always a digit or always a letter, but not mixed. This uniformity would promote code familiarity, provide an important transposition detection feature and ample capacity for expansion.

.3 Applying the Code to the National System

In this report we have identified and discussed the operating needs and other requirements, and presented a summary of the information that the postal code should convey. In applying the code, and assigning specific characters to the first two positions of the FSA element, the guidelines we developed were :

- use of a single alphabetic character, to be followed by two numerals, in the FSA code element should indicate that the area served is "ranked" high, in terms of the impact it has on the national system

- single alphabetic code characters that have a direct similarity to the original name, should generally be allocated on an "impact ranking" basis, e.g., "T" - FSA's in the Toronto geographic area; "M" - FSA's in the Montreal geographic area, and so on.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.3 (cont'd)

Obviously, there will be conflicts to be resolved in assigning single letters, e.g., "H" - Hamilton/Halifax; "W" - Winnipeg/Windsor; "V" - Vancouver/Victoria. The solution we propose would give preference to the higher-ranking location, i.e., Hamilton, Winnipeg, Vancouver, respectively: Halifax, Windsor and Victoria would be designated by other single letters or pairs of letters, e.g., "X", "WR", and "VC".

Based primarily on our analyses of mail volumes (see Tables 2 to 7), we "ranked" offices and geographic "FSA Groupings" according to their importance to the national system. The results of this analysis indicated the coding priorities. We would propose to assign a single character, followed by two numerals, to the top-ranked geographic FSA groups, e.g., M27 HK3, where "M27" would be an FSA in the Montreal geographic "group". The remaining geographic areas would be coded with a two-letter group followed by a single numeral, e.g., WR4 XG1, where "WR4" is an FSA in the Windsor "group".

Reference to Table 5 shows that the 25 top-ranked offices, on a total-Canada scale, currently process over 70% of the originating and incoming S/L letter mail. The Toronto perimeter offices (six of which independently rank in the "top 25" nationally) would, we propose, be coded within the Toronto geographic FSA grouping.

Using the initial letter of the location name for the primary position in the code, in order to promote familiarity, would produce only two "unacceptable" identifiers, in the sense that the initial letter in the FSA element would have no direct similarity to the original:

- "O" for Ottawa, ranked number 5, may cause confusion with both numeral 0 (zero) and, visually or with OCR, with the letter Q

- "H" for Hamilton, ranked 6, or Halifax, ranked 14.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.3 (cont'd)

We would propose that, at implementation, an alternative indicator be assigned to Ottawa (e.g., "A" or "G"). We would propose assigning "H" to Hamilton and, say, "X" to Halifax.

From our analysis of "FSA groupings" (see Table 7) we conclude that the following listing would ILLUSTRATE the application of our guidelines. Table 7 is a summary of more detailed computer-derived listings based on volume and transportation factors.

Area Ranking & Identifier		FSA Code	Volume % (Table 7)	Cumulative Percentage
1	Toronto	Txx	25.7	25.7
2	Montreal	Mxx	18.1	43.8
3	Vancouver	Vxx	7.6	51.4
4	Winnipeg	Wxx	5.1	56.5
5	Ottawa - Hull	Axx	4.6	61.1
6	Hamilton	Hxx	4.3	65.4
7	Calgary	Cxx	3.5	68.9
8	Edmonton	Exx	3.3	72.2
9	London	Lxx	2.8	75.0
10	Quebec	Qxx	2.7	77.7
11	Halifax	Xxx	2.6	80.3
12	Regina	Rxx	2.3	82.6
13	Kitchener - W'loo	Kxx	1.7	84.3
14	Windsor	WRx	1.6	85.9
15	Victoria	VCx	1.4	87.3
16	Saskatoon	Sxx	1.4	88.7
17	Peterboro - Oshawa	Pxx	1.3	90.0
18	Niagara - St.Cath.	Nxx	1.1	91.1
19	Moncton	MNx	1.2	92.3

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.3 (cont'd)

Area Ranking & Identifier		FSA Code	Volume % (Table 7)	Cumulative Percentage
20	Kingston	KGx	1.0	93.3
21	St. John's (Nfld)	NFx	1.0	94.3
22	Saint John (N.B.)	SJx	0.9	95.2
23	Thunder Bay	TBx	0.8	96.0
24	Barrie - Muskoka	BMx	0.8	96.8
25	Levis - Gaspé	LGx	0.7	97.5
26	North Bay - Sudbury	NBx	0.7	98.2
27	Kamloops - Okanagan	KLx	0.6	98.8
28	Trois Rivieres	TRx	0.6	99.4
29	Chicoutimi	CHx	0.3	99.7
30	Sydney	SYx	0.3	100.0

We repeat, that the above table is intended to be illustrative only. It is not a definite recommendation from this study team for national groupings of FSA's, or for the assignment of LDU's in any city. A final plan is beyond our terms of reference.

In order to best illustrate the principles upon which our design and format are based, we present a number of area maps (see Exhibits II to VI inclusive). The maps illustrate the delineation of FSA's and groups of FSA's (Exhibits II to V), and a "typical" layout for LDU's within a part of one FSA (Exhibit VI). Proceeding from the national picture to the local detail, the maps display:

- a possible grouping of FSA's for Canada, illustrating a national processing concentration "plan" (Exhibit II)

- an approximate, or illustrative, grouping of FSA's in the area between Quebec and Windsor, into feasible "mechanization/processing concentrations", based on volume and transportation criteria (Exhibit III)

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.3 (cont'd)

- a "typical" delineation illustrating FSA's within one "mechanization/processing concentration" (the illustration, Exhibit IV, is for the area of southwestern Ontario having London as its approximate centre)

- a "typical" delineation of FSA's for a metropolitan area (the illustration, Exhibit V, is for London, Ontario and its environs)

- an illustration showing the assignment of LDU code numbers in a sector of a city FSA (the illustration Exhibit VI, is for a small part of London, Ontario).

.4 Code Capacity

As a precautionary coding technique, to avoid some potential problems with optical character recognition (OCR) and to aid visual scanning, not all of the 26 alphabetic characters should be used. For example:

O or Q - but not both, in the first (most significant) position of an "Axx" code format

I (letter) - not used, to avoid confusion with the numeral "1" (unity)

E or F;
U or V - either one, but not both, in the same position.

There are certain other practical limitations on 2-letter pairs, and for coding purposes not more than 20 of the 26 alphabetic characters would normally be used in any single code position. Thus, in estimating maximum code capacities we have used permutations based on 20 alphabetic characters and 10 numerals. (5)

---

(5) Considerable research was conducted, several years ago by the Applied Psychology Research Unit of the Medical Research Council of Great Britain, into the "psychological factors" to be considered in designing codes for public use. The published papers were made available to the Canada Post Office, and reference to this work was included in our design study.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.4 (cont'd)

The FSA "code listing" displayed on pages 35-36, for example, employs only 17 letters in the first code position (five of them twice and three, 3 times), and 11 letters in the second position (only two of them twice, and none more than twice). Five letters do not appear at all in the FSA code illustrations - D, I, O, U and Z.

The two-element structure we have recommended, and the format we have presented, would have ample capacity for growth. The total capacity of a code such as that illustrated in the above listing, and avoiding the use of 0 (zero) anywhere in the FSA element, would be over 1400 FSA's (i.e., 16 times 81, plus 14 times 9 = 1422). Each FSA would have a capacity of 4000 LDU's (i.e., 20 times 20 (two alphabetic characters), times 10 (single numeral) = 4000).

It is beyond our present terms of reference to identify and delineate each FSA in Canada - this remains a matter for the Department's implementation - but we "guesstimate" from our studies that between 600 and 700 FSA's would be required for full national coverage. Of the maximum of 4000 LDU's available per Forward Sortation Area (FSA), we recommend that initially not more than half (2000 LDU's) should normally be assigned in any one FSA.

Our calculations, using as models all presently zoned cities (where density is relatively high), indicate that an LDU would, on average, cover 10.7 delivery points. This estimated average would, in our opinion, conservatively represent the city "mix" of business, apartment, residential, and other delivery points. The average in rural and wholly residential areas would be higher than for downtown city areas, and we estimate that the overall national figure would be closer to 12 delivery points per LDU. Table 8 sets out partial results of our analyses.

There are approximately 4.75 million delivery points in Canada.(6)

---

(6) Reference: The "Canada Post Office Annual Report - 1969" gives the following analysis:

- calls served by letter carrier	4,030,651
- group boxes served by carriers	16,045
- householders served by rural delivery	697,808
Total, as at March 31, 1969	4,744,504

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.4 (cont'd)

Using the lower "city average" of 10.7 delivery points per LDU as being more conservative, and assuming a total of 600 FSA's for the whole country, the calculation shows an average of approximately 740 LDU's per FSA. Expressed another way : 4.75 million delivery points would require 443,000 LDU's; the maximum available, using the code structure we propose, would be 2.4 million, i.e., 600 FSA's each of 4000 LDU's.

By following guidelines for implementation, such as those set out in Appendix D, and by not assigning more than 2000 LDU's initially in any single FSA (leaving 100% spare), ample capacity for growth, population shifts and changes in population density in any area would, we conclude, be assured.

The British Post Office's experience in recent years, and our understanding of their plans for complete Postcode coverage, confirm that a code for Canada, such as that recommended in this report, should provide an "acceptable degree of permanence". By the latter phrase we envisage a coding "system life" of at least 30 years, in a dynamic Canadian environment. By comparison, the British confidently anticipate a degree of permanence up to 100 years for their Postcode, using concepts similar to those recommended for Canada.

.5 Application of the Postal Code to "Non-operational" Needs

It was one of our terms of reference (Appendix A, paragraph 3):

> "to evaluate and report on whether the postal coding system could also satisfy the numbering requirements of the Department's management information system."

This would require the assignment of a unique code to each Post Office in Canada.

In our opinion, the code numbering of all Post Offices is quite feasible within the uniform postal code structure we have

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.5 (cont'd)

recommended. Each Post Office would become a separate LDU, and the device that we propose should be used, is to "dedicate" zero in the final code position to this purpose. In other words, the use of zero (numeral 0) in the last position, i.e., at the end of the LDU element, would be exclusively reserved for the identification of Post Offices; zeros would never be assigned for any other postal coding purpose. A zero in the final position would indicate that the "point of delivery" is a Post Office.

We recommend that:

- each Post Office should be assigned a unique 6-character code number within the uniform structure of the proposed Postal Address Coding (PAC) system

- the use of the numeral 0 (zero) in the final position of the code should be "dedicated", or reserved exclusively, for assigning code numbers to Post Offices.

In addition to the Post Office Department's "non-operational" needs, e.g., numbering offices, further requirements were identified during discussions with LVM's and other users. In our opinion, many of these requirements could be met by making use of the recommended PAC system - a significant "fringe benefit" of postal coding. For example:

DBS Census and Statistical Needs: DBS as the largest and most important source of statistical data in Canada, and as the government agency responsible for conducting population and other types of census, has an obvious need for sub-dividing the country into "statistical units". The most frequently used "units" are currently the province, county, municipality - city, town, village, etc. - or the census tract. The latter is a finite tract within a metropolitan area and, for census-taking purposes, each is sub-divided into "enumerator areas" and then

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.5 (cont'd)

into "blockfaces". The uncoded postal address is not suitable as a statistical unit, nor are Post Offices, Postal Stations or city zones.

DBS is now developing a more sophisticated system of "geocoding"(7) for large urban areas, which would permit the user to specify any "irregular" area for which he might want to obtain a statistical profile.

Based on our study, we are confident that the postal code recommended would meet the needs of DBS for both census-taking and other statistical purposes. The LDU, as we have defined it, should be a perfectly feasible and attractive alternative to the "blockface" as an indivisible unit. From the LDU module it would, in our opinion, be simpler to delineate enumerator areas, census tracts, municipal or provincial boundaries, and any user-specified area, than by using a system of coordinate "geocoding".

Large Volume Mailers' Needs : LVM's are required to self-sort bulk mailings in order to enjoy preferential rates. The proposed code would stabilize all self-sorting schemes, eliminate the need for individual mailing organizations to develop their own sorting codes, and possibly reduce the number of separations now being made. Separation into each FSA would be required of large volume mailers, and the code would allow further self-sorting by selected LDU's (for "straights") as a means of bypassing all Post Office sortation operations and ensuring faster service, at least on a portion of the items mailed.

Many LVM's, particularly the direct mailers, have a need for market analyses that correlate their large address files with published statistics. In our opinion, this need would be met by using the postal code as the "bridge" or link between a user's address files and the statistics based on census data. Also, the direct mailer could be more selective in market research

---

(7) Reference : "Geocoding Bulletin #1" published by the Dominion Bureau of Statistics - February, 1969 - explains the planned Geographically Referenced Data Storage and Retrieval System (GRDSR).

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.5 (cont'd)

or in reaching particular sectors, by linking together certain LDU's and omitting others within the same general area. We have already referred, on page 16, to the uses being made of the U.S. ZIP code in this regard, and we consider that the PAC system would provide users with an even better tool for Canada. We would not dismiss the possibility of the Post Office Department eventually extending its range of services to include a direct mailing service for customers, e.g., the preparation and sale of mailing lists.

Other users and other government departments, e.g., National Revenue Taxation, both as LVM's and as data collection agencies, would be able to use a postal code as a more effective analytical base than the Post Office name - which does not "describe" for the user the area served by that office.

.6 Unsuitability of Other Systems for Postal Coding Purposes

Earlier in this report (section 3.4) we dealt with the feasibility of incorporating existing zoning schemes into the PAC system. We also examined several other, non-postal, coding and referencing systems that may be classified (see page 29) as "area" codes or "point/location" codes. One of these existing schemes is very familiar to the public, i.e., the telephone number system; others are well defined and readily available. However, in every case we concluded that the possible advantages were heavily outweighed by the irrelevance of other systems to the operational needs of the Post Office. Specifically, the reasons for rejecting these alternatives include:

Telephone Numbers: On a national basis it requires ten digits for each subscriber - area code (3), exchange (3) and telephone number (4) - and exchange numbers may be "overlaid" in any given area, i.e., neighbours on the same block may have two different telephone exchange numbers. In addition to lack of brevity, the telephone system would have other disadvantages as a basis for postal coding, including:

- number changes are too frequent and the system too volatile

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.6 (cont'd)

- not all postal delivery points have telephone numbers - others have several; some telephone subscribers prefer unlisted numbers

- code number changes would not be within the control of the Department

- areas served by telephone exchanges may be generally incompatible with areas served by letter carrier offices, rural routes and other modes of postal delivery service.

Municipalities and Census Tracts: Consideration of these area "units" may be extended to include the DBS census enumerator's "blockface" and enumerator areas - both are elements of the census tract (CT). From our study, the CT and its elements came closest to meeting the needs of the postal operating service, and it would appear quite feasible to code such a system. An analysis was made of the relationship between the CT's and present postal zones: an example is presented in Exhibit VIII, for part of the Ottawa municipal region. Offsetting the advantage of potential compatibility between Post Office and DBS systems would be the following factors:

- changes in municipal and other census boundaries are frequent and beyond the control of federal government agencies

- census tract boundaries follow the "centre line" of streets; postal boundaries and letter carrier routes generally incorporate both sides of streets, and frequently cross municipal boundary lines in order to optimize delivery

- census and municipal "units" do not recognize large volume mail receivers, i.e., businesses, and generally emphasize the residential (the night-time) location of people rather than the day-time population distribution

- CT's, enumerator areas and blockfaces are numbered only on a local basis and would, in our opinion, require at least eight digits for national coding.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.6 (cont'd)

Distributing Centres, Post Offices and Letter Carrier Walks: In addition to city zoning schemes, examined earlier in this report, the Post Office Department uses other "system elements" that were considered as possible bases for postal coding. The letter carrier walk, or other delivery route, would have serious drawbacks as a coding vehicle. The overwhelming reason for rejecting any delivery mode as being unsuitable, is their complete lack of permanence.

The Distributing Centres (D/C's) would not, in our opinion, be a suitable coding vehicle, even though they constitute a valid profile of the national postal system. From an examination of volume data collected during our field work, it becomes clear that D/C's are not a homogeneous group in terms of function or importance, e.g., Cache Creek or Burns Lake, B.C., and Blind River or Moosonee, Ontario, cannot be compared in importance to Toronto, Montreal and Vancouver (8) - all are Distributing Centres, with roles to play as transportation transfer points or terminals for many years to come.

A code for D/C's and each of their respective dependent offices has been developed by TIME Inc., and was included in our "data bank". It requires five digits - three for each D/C, followed by two digits to identify the particular dependent office. Such a code is a good example of a "Forward-only" code, similar to the ZIP code, and suitable for many LVM's; but such a code would fail to satisfy the full operating need of the Post Office or the requirements of many non-operational users. To extend the TIME Inc. code, or one of similar structure, to meet the needs of Local or City sortation would require an additional three characters, making a total code length of eight characters, i.e., one-third longer than our recommended structure.

One other important problem would arise - that of international "uniqueness". Any 5-digit Forward code would cause serious difficulties in distinguishing U.S. from Canadian mail: a prefix digit would then be added in order to identify the country of destination - a further blow to code brevity! We concluded

---

(8) Reference to the supporting tabulations to Table 6 indicates the effectiveness of the Distributing Centre concept: further details are presented as Appendix E.

4. THE RECOMMENDED CODE STRUCTURE (cont'd)

.6 (cont'd)

that there are not enough unallocated ZIP-numbers (i.e., not in use by the U.S. Post Office Department) to provide sufficient capacity for the needs of the Canada Post Office.

Location Codes: There are a number of such existing codes, and we examined the feasibility of adopting any one of them as a base for a postal code. Essentially, location codes, such as the DBS standard geographical classification code or the Standard Point Location Code (SPLC) used in the transportation industry, identify a named point. The needs of the Post Office are related to an area served from a location, rather than the location itself.

Location codes have no solid base of public familiarity, having been developed for special purposes; their format and digit-position significance is not "self-evident"; and no error-detection or transposition-checking features are incorporated. Also, as with Distributing Centres, code length would become too great if a Local code element were to be added.

"Geocodes": Reference has been made to the DBS plans to implement a geocoding system (GRDSR). Other plans, based on the Universal Transverse Mercator (UTM) grid system, have been suggested. In our opinion, these systems are unsuitable for a variety of reasons, including:

- they assign equal importance to every point on the map
- they are inflexible in defining boundaries, e.g., an area 10,000 metres square or 413 metres square, that does not relate to the "real world" of postal delivery operations, especially in downtown city centres
- there is no method for assigning two or more codes to the same location, as would be required to identify different large volume mail receivers in the same building complex; the solution proposed is for suffix numbers to be added - destroying code uniformity and sacrificing brevity.

5. A PLAN FOR IMPLEMENTATION

.1 The Options and Priorities

Basically, there are two techniques available for implementation:

- the prolonged build-up followed by the "D-Day" introduction of a new system on a full national scale

- the phased implementation, in one or two major areas at a time, with each phase effectively debugged before the next is tackled.

Each technique has a number of merits and disadvantages. The U.S. followed the first option with the ZIP code, the British opted for a phased introduction of their Postcode. A phased implementation would be more appropriate in Canada, for the following reasons:

.1 There is, in our opinion, little merit to pushing ahead with full national coding without the capability to follow up the introduction of codes with effective mechanization. Coding, as we have emphasized earlier, is not an end in itself - its most significant benefits would be derived in conjunction with mechanization.

Mechanization is the main justification for postal coding. To use the "lead time" required to code every village and homestead in Canada, as a reason for not moving forward "with all deliberate speed" on a mechanization program, is simply to use postal coding as an excuse for procrastinating over mechanization.

In our opinion, the design specification and equipment selection, followed by the time taken to procure coding and sorting machines, will determine the speed with which the potential benefits of coding/mechanization are realized. We recognize that adequate facilities need to be available prior to installing equipment.

.2 It is not of equal importance to the national postal system to have all areas coded, as reference to Tables 6 to 7 should confirm. Phasing would allow the acquisition of capital equipment and costs of implementation to be spread

5. A PLAN FOR IMPLEMENTATION (cont'd)

.1 .2 (cont'd)

over several years. However, by tackling the total job in a sequence of steps governed by each area's ranking in terms of importance to the national system, the major benefits would be derived first.

.3 Phasing would allow more effective deployment of limited staff resources. Closer direction and full control of the national program by Headquarters would be attainable and this, in our view, would be of critical importance. The Department does not have available a pool of the trained and competent postal coding personnel needed to undertake national coding by the "blitzkreig" technique.

.4 The potential impact on staffing at letter carrier and postal clerk grade levels, would be spread over several years.

In summary, we conclude that the time for action in moving ahead with a planned and controlled program for mechanization and coding - is NOW. Early approval for both programs to get under way together would ensure that postal coding would always be introduced to an area well ahead of scheduled mechanization; in ample time for public acceptance to be built up, for LVM's to code address files, and for other preparations - such as the introduction of dual-aperture boxes - to be thoroughly accomplished.

We recommend that :

- implementation of the national PAC system should be a phased program, geared to precede the procurement of code-marking and mechanized sortation equipment

- the sequence and priorities for selecting implementation areas should be governed wherever possible by the significance of each area to the total national postal system, based primarily on generated and incoming mail volumes (see Table 7).

5. A PLAN FOR IMPLEMENTATION (cont'd)

.1 (cont'd)

The terms of reference for this study require us merely to "evaluate and report on" the application of the postal coding system to the Department's management information system (MIS). This we have done; confirming the feasibility and recommending the method by which this requirement could, in our opinion, best be met (see Section 4.5). It is, we understand, one of the Department's immediate priorities to design and implement not only the MIS, but to introduce a revised Money Order system in 1970. For the latter system to use the postal code it would be essential, as a first step, to assign code numbers to all Post Offices.

For this to be accomplished using the uniform structure of the PAC system, it would be of critical importance to delineate and code all FSA's in Canada. Otherwise, such a step would not have to be taken until each area were planned for full implementation of the postal code. The coding of Post Offices within each FSA does not present a major problem - each Post Office would be assigned an LDU code, consisting of a 3-character group; two letters followed by a numeral 0 (zero). It would be presumptuous of us to comment on plans for implementing either the Money Order or Management Information systems, but insofar as plans may be made to use the postal code structure for non-operational purposes, the following observations are, in our opinion, relevant:

- It would be foolish to jeopardize the primary operational value and public acceptance, or the permanence, of the postal code, by the premature and "arbitrary" delineation of FSA's to meet the deadlines of a secondary priority; only to find that some, at least, of the boundaries must later be re-drawn - requiring that the Post Offices affected would need to be recoded.

- The coding of all FSA's as a pre-requisite to numbering Post Offices for the MIS and Money Order system, should be regarded as strictly for internal use, i.e., the Forward (FSA) codes should not be publicised or released until full postal coding for an area has been completed and approved (i.e., the Local - LDU - codes assigned).

5. A PLAN FOR IMPLEMENTATION (cont'd)

.1 (cont'd)

The reason we so strongly emphasize the desirability of not pre-issuing FSA code numbers is that LVM's would, in our opinion, be unwilling to accept and use the Local (LDU) code if it were not available in one "package" initially. Mail users want the Forward code to enable them to self-sort mail - it is the Post Office Department that needs the Local code to aid mechanization of City sortation.

Having made the above observations, we are obliged to add that there appears to be no reason why the delineation of FSA's could not be accomplished in readiness for use within the Money Order system. We would strongly recommend, however, that the job should be tackled by a "Coding Task Force" rather than a "Money Order (or MIS) Task Force". Given this approach we see no insuperable problems to integrating the parallel requirements of the PAC system implementation and MIS/Money Order programs within six to eight months following approval to proceed with coding. Since the plans for the MIS/Money Order programs are quite beyond our terms of reference, we have not included the integrated development of these two projects in our detailed plan for implementation of the postal coding system.

.2 A Phased Timetable

As Exhibit VII we attach a plan, in the form of a CPM network diagram, for phased implementation. Overall, the constraint on the speed of national implementation and the attainment of the benefits of mechanization, is likely to be the rate at which the necessary equipment can be procured and brought into effective operation.

In the immediate short term, following a Departmental decision to proceed with postal coding, there would be a need to move ahead on three vital aspects:

- assigning the organizational responsibility for coding and mechanization, and selecting the key "task force" people to direct the project (see Section 5.3)

5. A PLAN FOR IMPLEMENTATION (cont'd)

.2 (cont'd)

- selecting a test area in which to train "task force" and field staffs, perfect the coding techniques for assigning LDU's, and proceed with implementation of one area

- liaising with national postal unions and large volume mailers.

The selection of a test area would set in motion the phased introduction of postal coding in Canada : there is no doubt in the minds of the study team that successful implementation of coding in the test area should be followed by implementation in the two major metropolitan areas of Toronto and Montreal. The benefits of coding and mechanization are optimized when major centres are exchanging large volumes of coded mail on each other. This important factor is among the criteria for selecting a suitable initial test area : other factors include the following :

- the test area should be processing a "significant" volume - say, between 2.5% and 5.0% - of the total national mail

- the bulk of its out-of-city mails should be exchanged with a large metropolitan terminal, preferably Toronto (the largest)

- the test area should include a presently zoned city and contain a wide selection of large volume mailers and receivers

- it should be within reasonably convenient travelling distance from Headquarters, i.e., in the area between Quebec City and Windsor, for effective and speedy communication and direction from Ottawa, and to ease the problems of assigning "task force" people to work in the area on a temporary basis - say, for six to nine months

- the chosen test area should have a proven and innovation-oriented management group, with good employee relations : the latter would be critical in testing out the impact of mechanization and developing guidelines for national implementation.

5. A PLAN FOR IMPLEMENTATION (cont'd)

.2 (cont'd)

We recommend that :

- a test area should be selected, based on the criteria presented above, in which to train and evaluate coding staff, perfect the postal coding techniques, appraise the potential implications on sortation methods and postal employees, and prepare guidelines for achieving national coverage

- following successful introduction into the selected test area, postal coding be implemented for the Toronto and Montreal areas, preferably in parallel.

Following the test area, and then Toronto and Montreal, other areas may be coded in grouped sequence according to their processing volume and mail-exchanging significance, e.g., Vancouver and Victoria; Ottawa and Quebec; Hamilton - Kitchener - Windsor; Winnipeg and Regina - Saskatoon; Calgary and Edmonton; and so on.

The law of diminishing returns applies effectively to mechanization. Executive judgement may be exercised to establish a cut-off beyond which mechanized sortation should not be implemented in the relatively short term.

Of thirty geographic areas in Canada (see Table 7 and pages 35-36), twenty account for over 93% of the total S/L letter mail. These areas should certainly be fully coded - both FSA and LDU coding - preparatory to mechanization. Not one of the other ten areas accounts for more than 1% of national mail volume, and for these areas it is quite feasible (within the PAC system we recommend) to fully code only the main urban centres, or those with letter carrier service. For all other places it would suffice

5. A PLAN FOR IMPLEMENTATION (cont'd)

.2 (cont'd)

to have a Forward (FSA) code plus a single LDU number for the customers served by each Post Office.

In other words, the system would work much like the present rural routes - the Post Office LDU would be analagous to the "RR #" in the postal address. In the same way that a change from rural route service to letter carrier delivery now results in a change of postal address, the later introduction of mechanization would result in the assignment of a changed LDU code. The extent to which this should be applied requires detailed study during the planning for implementation. The need to provide more than one LDU code for customers served by smaller offices, e.g., to distinguish mail for rural routes from that for box holders, would be considered in the light of potential growth, concentration schemes, statistical or other uses (Departmental or non-Post Office).

In the final analysis, the criterion that, in our opinion, should be applied is the economic attraction - or, rather, the absence of it - of mechanized sortation for certain "low volume" areas. Even without mechanized sorting equipment in an area, coding desks to prepare marked mail for Forward destinations would be feasible, in relatively small processing offices.

Our CPM network indicates an elapsed time, from the date of approval to proceed, of:

- 45 weeks to complete the preparation and training of staff; complete the equipment specification and selection processes; develop the Public Relations and LVM support programs; and complete the coding of the test area

- approximately two years, including 52 weeks to procure equipment, up to the cut-over to new sortation procedures, based on coded mail in the test area

- less than three years to the implementation of coding for Montreal and Toronto, and the planning for completion of a full national plan.

5. A PLAN FOR IMPLEMENTATION (cont'd)

.2 (cont'd)

Equipment procurement is on the "critical path". If this activity can be accelerated, and if the Department is able to deploy competent coding teams simultaneously in more areas without losing control from Headquarters, the national implementation program may be speeded up. However, we have estimated times that are, in our opinion, realistic and attainable and we have attempted to optimize the deployment of resources, avoiding the dangers inherent in "crash programs".

It may be worthwhile to bear in mind that the BPO has taken ten years over their planning and implementation - but appear to be doing the job properly - and in the U.S. it has taken a similar time to determine that the ZIP code has drawbacks limiting its operational usefulness, i.e., it does not meet the full needs of City sortation.

Other notes on the CPM diagram, the original of which has been lodged with the Department, are as follows:

- all activity duration times are shown in elapsed weeks (not man-weeks)

- standard Departmental symbology has been used throughout

- the starting event is constrained by the submission, evaluation and approval of this report; these preliminary activities are "critical" but no duration times are shown

- the network presents the plan for implementation in three phases - the amount of detail presented varies for each phase:

  Phase 1 - plan and implement the "test area"

  Phase 2 - plan and implement Toronto and Montreal

  Phase 3 - plan and implement the balance of the national program

5. A PLAN FOR IMPLEMENTATION (cont'd)

.2 (cont'd)

- Phases 1 and 2 are overlapped; it is probable that Phases 2 and 3 would be similarly overlapped for implementation, but the details are not evident in the diagram

- implementation of other Post Office programs may affect the network; where possible we have indicated the interface, e.g., coordination with the introduction of dual-aperture boxes - however, the introduction of mechanized equipment to the test area, Toronto, Montreal and other locations may be affected by the program for buildings.

.3 Organization and Staffing Considerations

The successful translation of concepts and plans into a viable, operational system on a national scale requires managerial talent of a high order. Concepts and plans, however well conceived, count for little if the execution is poorly directed and inadequately staffed. The most important decision that the Department has to make will be the appointment of the senior executive to direct and coordinate the introduction of both coding and mechanization: the two functions are, in our opinion, indivisible.

Coding and mechanization with all deliberate speed should be the aim of implementation, and this will have a direct impact on many Branches in the Department. For these reasons we propose that implementation should be carried out using the operational "task force" approach.

We recommend that:

- a "Coding and Mechanization Task Force" be set up and directed by Headquarters, to carry out implementation of postal coding and the installation of mechanized equipment up to a fully operational status

- the "Task Force" be headed by a senior executive who should report on a direct and regular basis to the Departmental Planning Board.

5. A PLAN FOR IMPLEMENTATION (cont'd)

.3 (cont'd)

The task force for the implementation of the initial test area, should, in our opinion, be assembled on the pre-conceived assumption that its members would form the team-leaders for succeeding phases of coding. They should, therefore, be carefully selected and somewhat more senior than might otherwise be justified. We would expect the appointed task force director to participate in selection of his team.

The complexity of coding should not be underestimated. It is certainly not the sort of task that could be successfully accomplished by an ad hoc collection of "readily available" junior staff from any HQ Branch or Field office. A system that is intended for use over a minimum 30-year "life" deserves the best available resources.

We do not envisage the implementation task force as being a permanent organizational group, but it would function throughout the formative initial period. As the implementation of coding, followed by the installation of mechanized equipment, is successfully accomplished, the responsibility for on-going systems maintenance should become a senior responsibility within the Operations orbit.

.4 Promotion of Public Acceptance

The benefits of mechanization will not be obtained unless the mailing public, and particularly the large volume mailers, participate by using postal codes as a part of the address. It is, therefore, of critical importance to ensure the highest possible level of public acceptance. The simplistic solution would be to enforce compliance by imposing "penalties" or by refusing to handle uncoded mail: neither course of action is recommended; at least until all means of persuasion and promotion - backed up by good service standards - have been tried. Some implications of imposing a service "penalty" are set out as Appendix F.

The purpose of this section of our report is not to map out a detailed publicity campaign - this is beyond our terms of reference, and our professional competence - but rather to suggest

5. A PLAN FOR IMPLEMENTATION (cont'd)

.4 (cont'd)

some ideas worthy of consideration. Our suggestions include:

- the demonstration to the mailer, supported by favourable publicity, that coding does result in improved or consistently attained standards of delivery service

- the extension of, and firmer adherence to, the policy of offering "bulk mailing" rates to LVM's - basing a revised system of "incentives" on:

  - coding and self-sorting mail to FSA's
  - coding and self-sorting down to selected LDU's, i.e., "straights" (based on bundle-size criteria, as now)
  - actual cost savings realized.

- the preparation, printing and distribution of well-indexed and attractively laid out code directories, backed up by an updating service and code enquiry assistance by telephone, and further supported by directory master tapes (or disks) for computer users

- the development by the Post Office Department of master computer programs to convert large address files as a service to LVM's - we recommend that this be undertaken, and the programs fully tested and debugged, as an essential part of implementation in the initial test area

- the provision of coding assistance to LVM's who use "conventional" (non-computerized) techniques for filing and printing addresses, similar to the service offered to LVM's at the time of a zone numbering change

- publicity of all types; such as posters, messages on stamp booklets, courier vans and cancellation dies; press, radio and TV coverage; householder leaflets and local notice board exhibits; the running of a contest to find a suitable mnemonic abbreviation for the code (e.g., "ZIP", "Postcode" or "PACS-code") - the whole campaign to be planned and coordinated by the appropriate professional groups.

5. A PLAN FOR IMPLEMENTATION (cont'd)

.4 (cont'd)

A publicity program would, we recommend, be phased for each area, to "hit" the public approximately three weeks before the selected code introduction date. Obviously, many weeks of preparation would be required prior to "publicity day", but to release a campaign of public promotion too far in advance of introduction generally results in a falling off of responsive enthusiasm. On the other hand, the promotion campaign should not end with the introduction date - the promotion should be a continuing effort.

Mailers, in particular the business firms using pre-addressed envelopes, should be encouraged to include their postal code on letterheads and pre-printed envelopes; banks should be encouraged to include postal codes on cheque forms; "Use the post code - send a post-card" blanks should be freely available for the public to notify their correspondents, in the way that change-of-address cards are presently provided.

The coding publicity should clearly indicate the correct address format, including the position the postal code should occupy in the address. We advocate that the code should appear as the final item in the address, i.e., after the province, or on a final line by itself. This positioning would have the following advantages:

- compatibility with other postal administrations' requirements, particularly the BPO and the U.S. Post Office Department - facilitating the ultimate machine processing of coded international mails

- the risk of the code being obliterated or made illegible by the cancelling postmark, would be minimized.

The alternative positions available would either:

- require the code to be written in a specified position, e.g., in a "box" separated from the body of the address: this would cause problems for all mailers using labels, address plates or other mechanical printers, and for typists, having to position an envelope within particular tolerances

5. A PLAN FOR IMPLEMENTATION (cont'd)

.4 (cont'd)

- present the postal code as a prefix to the addressee's name; too reminiscent of "army days" or "1984" to obtain easy public acceptance - at least, in our opinion.

.5 Code System Maintenance

Once introduced to an area, the postal code must be maintained. A number of requirements for systems maintenance were implied in section 5.4 above, e.g., directories and computer master programs - once issued - should be kept updated.

The main task would be to incorporate changes (particularly additions) to the postal code arising from such sources as:

- changes in real estate; residential or business construction or sub-division

- the identification of additional large volume receivers; businesses qualifying as a "straight", justifying a separate LDU

- the introduction of letter carrier service to replace a rural route or group box delivery.

These changes would require the same type of "intelligence" reporting as the present system. In addition, liaison with local authorities, planning boards and real estate developers should be improved. A system for receiving notices of building completions (rather than construction permits issued) should be developed with local governments, or with DBS.

"Users Councils" may be set up under the sponsorship of the Post Office, in cooperation with local Chambers of Commerce or Boards of Trade, to discuss matters of mutual interest to mailers and the Department - designed to operate not as pressure groups or "lobbies" but to develop constructive programs aimed at improving service to customers at reasonable cost.

6. IMPACT OF CODING ON SORTATION

.1 The Benefits of "Streamed" Mail Flow

The principle of encouraging the mailing public to separate originating mail into streams of "pure" local and out-of-town mail at the street letter box (SLB) is well established in some other countries. However, Canadian experience has been limited to several moderately successful but short-lived experimental programs in Montreal and Toronto, and currently another small-scale test in Hamilton. Earlier task force studies (9) recommended a national program for Canada, particularly in the major centres. We not only support these recommendations, but conclude that significant operational and cost benefits would accrue to the Department if "pure" mail streams flowed from the SLB's as input to either manual or mechanized sortation.

The principal benefit would be derived from a reduction in the Direct Labour Hours required to process mail through the Forward-primary operation. Currently, originating mail that is deposited in SLB's, is received into the processing stream as a mixture of local and out-of-town mail. A major saving would result from ensuring that locally originating and locally destined mail could be "streamed" to by-pass the Forward-primary sortation process, and flow directly to the City sortation operations.

The volume of mail involved is considerable. Quantitative data developed during an earlier study (9.a.) reveals that some 40-45% of the national Originating S/L Letter mail is deposited in SLB's, and our study indicates that approximately 39.7% of Originating S/L letter mail is destined for Local distribution. During the year ended July 31, 1969, the period covered by our collected volume statistics, this would amount to over 600 million pieces.

The conclusion to be drawn is that over 600 million items of S/L Letter mail need not be Forward-primary sorted, if "purified" streams were available from the SLB's. This would represent

---

(9) References:

(a) Report on "Mail Sortation, Distribution and Presorting" by Price Waterhouse Associates - June 1969

(b) Report on "Transportation" by Samson Belair Riddell Stead Inc. - June 1969

(c) Report on "Facility Design and Equipment Utilization" by Price Waterhouse Associates - July 1969

6. IMPACT OF CODING ON SORTATION (cont'd)

.1 (cont'd)

a potential saving of some 400,000 hours of Direct Labour on sortation, most of which would be in major centres.

Since the time available to process and clear this volume prior to outward despatch time is limited, all the resources must be concentrated into a short period, which becomes the daily peak load. However, if Local mail were streamed to follow the out-of-town traffic in sequence, the peak-period volume would be significantly reduced.

Continuing the present "mixed mail" operation within a mechanized system, the volume of Originating letter mail that would have to be "code marked" and machine sorted during the pre-despatch evening peak period would be unnecessarily heavy if all Originating traffic continued to be handled together. In addition, with coding/mechanization implemented, separate processing of Incoming mail would facilitate the use of a "short coding" technique: the alphabetical part of the Forward (FSA) code element, i.e., a single letter or pair of letters, need not be coded in the Originating Office. Consequently, coding key-strokes could be reduced in the largest mechanized offices by approximately 15%.

Other "trade-off" benefits of separated mail streams would include:

- Forward or outward mail may be prepared for despatch earlier

- Outward mail should include almost all mail that currently misses despatches or is "bulked" into a major terminal in the system to be sorted again, due to its having been collected in the period just prior to despatch

- the working hours of Local or City section staffs could be adjusted to an earlier start, if both Forward and Local mail streams were available for processing in parallel, instead of in sequence: this would result in improved working conditions for the night staff, but would also nullify some of the reductions in estimated capital costs

6. IMPACT OF CODING ON SORTATION (cont'd)

.1 (cont'd)

- the lighter load in the Forward processing section could reduce the number of manual sorting cases or the number of coding desks and sortation machines required, and hence reduce overall floor space requirements.

There are, however, several offsetting costs that need to be considered, the main one being the cost of street letter box collections. This cost would be influenced by a number of factors, including the method of collection, scheduling of pick-ups, the receptacle design and the type of mail bag (or other collection receptacle) used by the City Services courier to clear the box. Although this matter is beyond the terms of reference for this study, we offer the following observations:

- the cost to clear and segregate mail, in any dual-stream operation, should represent only a marginal increase over the costs associated with current SLB collection contracts. Therefore, although present contractual arrangements in Hamilton call for "double" payment for clearing a dual box site, we consider that such a costing approach for a permanent dual box stream operation is unrealistic and excessively "loaded", and should be subject to re-negotiation. The contractor would be due some additional revenue for his efforts, but certainly not double.

- the operating schedule for clearing of boxes could be modified without jeopardizing realistic service requirements. For example, the City or Local mail receptacles should not require clearing on <u>every</u> scheduled SLB run. This Local mail would not, in any case, get better service than the standard of "next-day delivery", which could be maintained equally well with "evenings only" pick ups. This type of operating strategy would effectively minimize the incremental cost of clearing additional boxes.

- there would be a need for additional SLB's, preferably of a new design with improved ease of opening and access for the courier, and more effective public acceptance and usage by simplifying the box identification and purpose. A related

6. IMPACT OF CODING ON SORTATION (cont'd)

.1 (cont'd)

factor is the design of the collecting receptacle, which should reflect the requirements of speed, convenience and security, with reliable segregation and low cost. In our opinion, a well designed SLB could increase the "purity" of the mail streams and, at the same time, simplify box maintenance and bag handling within processing plants, and optimize City Services operating costs.

The study team is aware that the Department's Special Projects Branch has recommended an extension of the Hamilton trials. In our opinion, a costs/benefits analysis of this project based on the actual add-on costs now being incurred may be misleading, and may give an unsound basis for reaching conclusions regarding a long term national scheme, for the following reasons:

.1 The present operation does not take into effect the implications of streaming for mechanized sorting plants.

.2 The contractor is being paid too much for the clearance of each additional box placed on the test sites: this is not a reasonable contractual structure and, furthermore, each "city" box does not necessarily require clearance on every scheduled trip.

.3 A helper has been assigned to each truck for one trip on each of two routes. In our opinion, city-wide route restructuring and rescheduling should level out the increased time required to clear additional boxes, and remove the need for part time helpers.

.4 Potential benefits achievable through an integrated systems approach, which would cover improved box design, collection schedules, routing, plant handling of bags and mail streams, have not been fully evaluated.

On balance we conclude that the operating results so far achieved in Hamilton, of 88.3% "pure" mail in the city stream, is encouraging; particularly in light of rather limited publicity and the somewhat indistinguishable "makeshift" boxes. The present

6. IMPACT OF CODING ON SORTATION (cont'd)

.1 (cont'd)

indications are sufficient to indicate that a fully engineered plan could achieve better than 93% "pure" mail streams. The benefits of having such pure streams in postal operations would be a key factor in implementing a national coding and mechanized sortation scheme.

> We recommend that:
>
> - a national program of mail segregation through separate Local and out-of-town street letter boxes, be developed and implemented throughout the postal system.

Inherent in such a plan would be acceptance of the principle that no deliberate effort would be made to meet service requirements for mail deposited in the wrong box - particularly Forward mail deposited in Local-delivery boxes. To assist the mailing public, and to encourage code usage, we recommend that the box aperture for Local mail be clearly "labelled" with the FSA codes included in the Local delivery area.

.2 The Costs/Benefits of Mechanization

A policy decision to mechanize at least part of the sortation process is implied in the terms of reference for our study, see Appendix A, paragraph 2. During the course of our study we have:

- designed a code that would, in our opinion, be particularly suitable for use with mechanized or automated systems, without having any adverse effect on manual systems
- sought to identify the most economically attractive and proven mechanized system, likely to be available to the Canada Post Office in the immediate future
- studied the probable developments in mechanized coding and sorting techniques.

6. IMPACT OF CODING ON SORTATION (cont'd)

.2 (cont'd)

Although coding has application to all types of mail, our study and costing of mechanization was confined to the processing of S/L letters. Current mechanized systems for processing this "product line" may be divided into two broad categories:

.1 Direct sorting - as employed in the U.S. Post Office Department - using their standard letter sorting machine (LSM)

.2 "off line" letter code-marking - the "marked mail" system used in Britain and other postal administrations, e.g., Australia and Germany.

With Direct sorting, the mail is read "on line" either by a keyboard operator or an optical character reader (OCR). Both of these methods are the mechanized equivalent of manual, "knowledge", sortation.

In the "marked mail" system the letter is passed in front of an "off line" coding desk operator, whose keystrokes cause the envelope to be marked for subsequent mechanized sorting. A development which is taking place is to combine OCR and mail marking in a single machine, i.e., using OCR to replace the coding desk operator. The "marked mail" technique has the distinct advantage; that once a letter has been marked, it may be sorted repeatedly at any mechanized office without repeated keying.

The "marked mail" concept, which was researched by the Canada Post Office more than a decade ago, has been adopted by the BPO and is being implemented to a national plan in the U.K. Also, the "marked mail" system has been recommended to the Canada Post Office by the study teams reporting on the Environmental Forecast, and Facility Design and Equipment Utilization.

We concur in the recommendations of these earlier study groups in this important area. In our opinion, the marked mail system would provide:

- a technologically proven method of mechanized sortation for all short and long letters

6. IMPACT OF CODING ON SORTATION (cont'd)

.2 (cont'd)

- the flexibility to benefit from advancing technology, without requiring major methods changes

- an opportunity to introduce a uniform national system of mechanized sorting, by locating suitable equipment at all the major sortation points across Canada: the code marking and reading must be standardized, but the remainder of the equipment may be of various makes.

Broad estimates of the probable cost effect of mechanization have been made in the past without, it would appear, being substantiated by any detailed calculations. Because mechanization and coding are so closely intertwined, we carried out a cost study to substantiate our conclusions and recommendations. Since the British Post Office is using the marked mail system and, in addition, they represent the only source of detailed factual costing data available, we based our approach upon a current study made by the BPO for the Newport area.

Using these data and standards, adjusted for Canadian conditions, the direct costs of mechanizing the Montreal City Post Office have been estimated, and are attached as Appendix G. The assumptions made when preparing these estimates are included in the Appendix. The main conclusions drawn from our analyses were that mechanization of the Montreal Office, with streamed mail from double-aperture street letter boxes, would:

- require a capital outlay of $4.7 millions (Appendix G, section D)

- produce an annual direct cost saving of $531,000., compared to the cost of processing an identical volume using the present manual system (Appendix G, section A)

- yield an annual return on capital of approximately 11.4%.

Extrapolating the Montreal cost/benefit estimates, and assuming the national installation of double-aperture boxes, mechanization in all major mail processing plants across Canada would, we estimate:

- require a capital investment of $31.7 millions, spread over

6. IMPACT OF CODING ON SORTATION (cont'd)

.2 (cont'd)

the life of the implementation program

- produce an annual direct saving of $3.6 millions, compared to the cost of present operations, when complete mechanization is operational.

However, using the present Montreal operation as a basis for comparison with a fully mechanized scheme, tends to obscure several important factors. The Montreal Office employs a considerable labour force of continuous part-time staff and casuals. At present, these part-time staff are paid at a much lower hourly rate than permanent staff although, in Montreal, they sort approximately 60% of the City letter mail. Permanent staff in Montreal cost the Post Office twice as much on average (including fringe benefits and allowances for vacation and other absence) as part-time employees.

The impact of this wage rate difference is clearly shown below, where the estimated costs for a mechanized processing operation in Montreal, would probably be higher than for a manual system, based on the assumptions:

- that a coded and streamed mail flow is available

- that on the manual system, casual or part-time ("A-B-C") staff would continue to process approximately 60% of the City mail

- that casual staff costs would average about 46% of permanent staff costs, including fringe benefits and allowances.

On this basis, a mechanized scheme would cost more than a manual scheme, by $250,000 per year in Montreal:

	$
Estimated Annual Direct Cost of present Montreal operation - but with coding and dual-aperture SLB's implemented (see Appendix G, section B.1)	3,986,000
Estimated Annual Direct Cost of a mechanized operation in Montreal (see Appendix G, section C)	4,236,000

6. IMPACT OF CODING ON SORTATION (cont'd)

.2 (cont'd)

Before drawing too many misleading conclusions from the above analysis, the following factors should be considered:

.1 In the mechanized scheme, items other than labour (principally equipment depreciation and interest on capital), would account for $741,000 (see Appendix G, section C):

	$
Spare parts	70,000
Depreciation	466,000
Interest on capital	205,000
	$741,000

.2 The mechanized scheme would require 485 full time staff to sort the S/L mail and provide maintenance services: the equivalent manual scheme would require 617 staff to perform the same tasks:

- 445 permanent staff
- 172 part-time or casual staff.

In consequence, future wage settlements would, if current labour cost trends continue, close the "cost gap" between manual and mechanized schemes very quickly, for the following reasons:

- 27% more staff would be employed under the manual operation

- the costs to the Department of the 172 part-time or casual staff may be expected to escalate more rapidly than the average for full-time staff - reducing the present big differential

- the cost of labour tends to increase at a more rapid rate than the cost of equipment (depreciation and maintenance).

.3 Full mechanization is at least three years away from implementation, by which time the effect of increasing labour costs

6. IMPACT OF CODING ON SORTATION (cont'd)

.2 .3 (cont'd)

could more than offset the apparent cost advantages of a manual system based on coded, streamed letter mail sortation schemes.

The study team's calculations and working papers have been lodged with the Department. Obviously, more rigorous cost studies would be needed, to confirm or modify the assumptions made in this study, e.g., that assumed machine throughput rates are valid and fully attainable. There is also a need to examine such factors as the supervisory and administrative staff requirements, and the possible impact on in-plant transmission,transportation, and letter carrier operations; and to calculate the one-time costs likely to be incurred during phased transition to mechanization.

.3 The Impact of Coding on Manual Sortation

The Department's terms of reference (see Appendix A, paragraph 2.2) reflected concern for the impact of coding on present manual operations. Our conclusions in this regard may be summarized as follows:

- at worst, coding would have no adverse effect at all on manual schemes - the coding could be ignored
- the needs of mechanization should not be subordinated to the manual system
- coding could, however, significantly reduce - but certainly not eliminate - the knowledge requirements for manual sortation.

In order to evaluate the possible impact of coding, and to establish a valid basis for comparison with mechanized systems, the study team developed a model of manual sortation operations. The basis for this model was the Montreal Main Office, using processing volumes equivalent to those used in estimating costs

6. IMPACT OF CODING ON SORTATION (cont'd)

.3 (cont'd)

for a mechanized scheme (see section 6.2 above), and the Direct Labour Hours (see Table 1) pro-rated to reflect processing of equivalent volumes. The present distribution of City mail between "GEO" and "A-B-C" staff was preserved in our calculations (see Appendix G, section B). The results show that, for Montreal:

- the annual direct cost, based on the present system and an estimated 5356 Direct Labour Hours per day, would be approximately $4.77 millions (Appendix G, section B.2)

- the annual direct cost, based on a coded and streamed mail flow from SLB's, and requiring an estimated 4472 Direct Labour Hours per day, would be approximately $3.99 millions (Appendix G, section B.1).

The main effect of coding on the manual sortation of S/L letters would be that the knowledge requirement is reduced. This reduction in knowledge results in increased manual sortation rates. As an earlier study observed:

> "Related to the fact that knowledge is required to sort is the fact that the sorter must make a decision every time he handles a letter. Making such decisions requires more time than merely placing a letter into a separation in a "no-knowledge" sort." (10)

The actual operations in Montreal confirm that "no-knowledge" sorts yield higher throughput rates:

- City "GEO" Primary (a knowledge sort) : 795 letters/hour

- City "A-B-C" Primary (a "no-knowledge" sort) : 1440 letters/hour.

It is recognized that one very important factor in comparing these sorting speeds, is that satisfactory performance is a condition of continued employment for staff in the A-B-C section.

---

(10) Reference : Report on "Mail Sortation, Distribution and Pre-Sorting" by Price Waterhouse Associates - June 1969 (page 38)

6. IMPACT OF CODING ON SORTATION (cont'd)

.3 (cont'd)

By simulating the effect on the Montreal Main Office sorting operations, of coded and streamed mail from dual-aperture SLB's, the following conclusions were drawn:

.1 The Forward Section would sort about 98% of all mail, coded and uncoded, only once:

- coded Local Originating mail would be sorted to FSA's on the Forward case (a "no-knowledge" sort)
- uncoded Local Originating mail would be passed to the City section for "GEO" sorting (see below)
- coded Forward mail would be streamed to its appropriate processing plant; a large portion of it would be sorted by FSA
- uncoded Forward mail would be bulked to the main processing plant in the province of destination (this might result in a service "penalty" on a proportion of uncoded mails)
- the only portion (maybe 2%) of Forward mail that would require a secondary ("knowledge") sort would be some uncoded mail for the "home" province.

.2 The City Section would sort about 40% of the mail once; the balance would require two "A-B-C" sorts to the letter carrier walk:

- "GEO" sorters would be required to sort uncoded mail to FSA's "concentrated on" the processing plant
- mail self-sorted to FSA's by large volume mailers would be Final sorted to the walks by "GEO" staff
- Local Incoming mail, sorted to FSA's by other processing plants, would be Final sorted to the walks by "GEO" staff (this, and the two preceding categories, would be "knowledge" sorts)

6. IMPACT OF CODING ON SORTATION (cont'd)

.3 (cont'd)

- the balance of the mail would be shared amongst the "GEO" and "A-B-C" staffs : that portion sorted by "A-B-C" would require two sorts to complete to the letter carrier walks.

The simulation demonstrates that, with a manual sortation system, only the Forward element of the code, i.e., the FSA element, would be utilized. It would be possible to use the LDU element for Local sortation but two sorts would still be required - as at present with "A-B-C" methods.

7. ACKNOWLEDGEMENTS

In our report we have made special mention of the contribution made to our study by Mr. David Stewart of the BPO. Many others, closer to home, contributed in large measure to our study. The conclusions and recommendations, and any opinions expressed, are those of the consultants; but the comprehensive national coverage and the extended scope of our work would not have been possible without the great support we received:

- from the Field, at all levels from District Directors and Postmasters to junior staffmen

- from Headquarters, in many Branches and from many people: we would especially make mention of the EDP services made available to us, and the work of the Drafting Office, both of whose efforts speak for themselves in the form of Tables and Exhibits attached to this report

- from large volume mailers and other major customers, a number of whom took trouble to prepare statistics and other material for our consideration; and from other government departments.

We worked throughout our study in the stimulating environment of the several Task Forces assigned to plan and implement improvements in the Canada Post Office, but none could be more stimulating than the Coding Task Force under the team leadership of Mr. J.W. Moody, the Department's Chief Engineer. He and the other members of the team gave us invaluable insights from their many years' experience with the postal system, and smoothed our path at several critical points. We hope that, in return, they found the coding study a worthwhile task and as absorbing as it proved to be for the consultants.

SAMSON
BELAIR
RIDDELL
STEAD
INC.

Table 1

CODING TASK FORCE

ANALYSIS OF DIRECT LABOUR HOURS BY SECTION AND "PRODUCT LINE"

MONTREAL MAIN POST OFFICE FOR THE MONTH OF MAY 1969

	DIRECT LABOUR HOURS BY PRODUCT LINE					Total Direct Hours	%
Forward Section	S/L Letters	Oversize	Flats	Packets	Parcels		
Open, Segregate & Cancel	14,880	6,722	892	-	581	23,075	7.0
Primary Sort	28,461	6,388	8,042	1,009	5,885	49,785	15.0
Secondary Sort	5,475	968	3,743	-	-	10,186	3.1
Final Sort	15,348	4,391	-	-	-	19,739	5.9
Bag Sort	5,635	5,147	880	29	15,636	27,327	8.2
Transmission	6,796	1,824	2,035	37	805	11,497	3 5
Unmeasured Direct Hours	7,273	2,201	3,450	96	5,176	18,196	5.5
	83,868	27,641	19,042	1,171	28,083	159,805	48.2
City "GEO" Section							
Primary Sort	22,440	9,051	7,671	41	3,406	42,609	12.9
Secondary Sort	2,656	950	63	13	2,438	6,120	1.8
Final Sort	18,874	10,000	4,605	188	-	33,667	10.1
Bag Sort	2,848	1,364	2,942	104	3,028	10,286	3.1
Transmission	1,323	2,942	330	15	483	5,093	1.5
Unmeasured Direct Hours	15,371	7,535	4,822	121	2,291	30,140	9.1
	63,512	31,842	20,433	482	11,646	127,915	38.5
City "A-B-C" Section							
Primary Sort	19,252						5.8
Secondary Sort	10,934						3.3
Final Sort	9,520						2.9
Bag Sort	1,291						0.4
Transmission	1,101						0.3
Unmeasured Direct Hours	2,061						0.6
	44,159					44,159	13.3
Total Direct Hours	191,539	59,483	39,475	1,653	39,729	331,879	-
Percentages	57.7	17.9	11.9	0.5	12.0	-	100.0

CODING TASK FORCE - VOLUME DATA ANALYSIS

Table 2	Originating Forward Mail - by Office
Table 3	Total Originating Mail - by Office
Table 4	Incoming Local Mail - by Office
Table 5	Originating and Incoming Mail - by Office
Table 6	National Summary of Originating and Incoming Mail - by District
Table 7	Originating and Incoming Mail - National Summary by "FSA Groupings"

KEY to Column Headings :

CUMUL %	the cumulative volume percentage of the category of mail shown in the heading of Tables 2 -5, i.e. : - Originating Forward Mail (Table 2) - Total Originating Mail (Table 3) - Incoming Local Mail (Table 4) - Originating and Incoming Mail (Table 5)
DS	a District No. code used by the study team : five "economic regions" (1st digit) and the present Post Office Districts or autonomous Offices within each "region" (2nd digit)
GR	Grade of Post Office
DEP OFF	No. of Dependent Offices served, where the identified location is a Distributing Centre or District
1969 WALK	the number of Letter Carrier Walks, as at June 1969
POP THOU	Population, according to 1966 census figures, in thousands
POP PER LC	the approximate average number of persons served per letter carrier
DELIVER PER LC	the approximate average annual number of pieces of S/L letter mail delivered per letter carrier, i.e., the Total Local volume divided by the No. of Letter Carrier Walks
VOLUMES	see definitions of Local and Forward volumes, given on pages 11 - 12 of the report (section 2.3.3)
TOTAL EX TRANSIT	the Total Local volume plus the Forward Originating volume, i.e., excluding Transit volume - this is the minimum volume of Incoming and Originating S/L letter mail that would be processed under a fully coded system
TOTAL ORIGIN	Local Originating plus Forward Originating, i.e., the total S/L letter volume generated in the area served by a given Post Office.

RANK	CUMUL %	CITY NAME	PR	DS	GR	DEP OFF	1969 WALK	POP THOU	POP PER LC	DELIVER PER LC	LOCAL VOLUME IN THOUS ORIG	LOCAL VOLUME IN THOUS INCOM	LOCAL VOLUME IN THOUS TOTAL	FWD VOLUME IN THOUS ORIG	FWD VOLUME IN THOUS TRANS	FWD VOLUME IN THOUS TOTAL	TOTAL EX TRANSIT	TOTAL ORIGIN
1	17.8	TORONTO	ON	39	13	0	891	1133	1,271	540,726	222,032	259,755	481,787	378,410	131,865	510,275	860,197	600,442
2	29.1	MONTREAL	PQ	29	13	0	1097	1661	1,514	454,430	287,388	211,122	498,510	239,806	107,090	346,896	738,316	527,194
3	34.0	VANCOUVER	BC	59	12	72	610	683	1,119	390,372	144,201	93,926	238,127	103,605	40,043	143,648	341,732	247,806
4	38.5	WINNIPEG	MB	49	12	194	334	498	1,491	462,242	88,168	66,221	154,389	94,495	73,586	168,081	248,884	182,663
5	42.5	OTTAWA	ON	38	12	59	305	384	1,259	459,793	60,046	80,191	140,237	84,627	25,618	110,245	224,864	144,673
6	45.6	DON MILLS	ON	33	9	0	50	56	1,120	659,080	2,053	30,901	32,954	66,302	0	66,302	99,256	68,355
7	48.6	HAMILTON	ON	33	11	41	203	327	1,610	468,773	29,507	65,654	95,161	64,993	11,815	76,808	160,154	94,500
8	51.3	QUEBEC	PQ	21	11	94	200	353	1,765	414,010	39,585	43,217	82,802	56,147	10,558	66,705	138,949	95,732
9	53.8	REGINA	SK	42	10	99	108	131	1,212	385,740	18,022	23,638	41,660	53,318	14,241	67,559	94,978	71,340
10	56.2	CALGARY	AB	44	11	117	266	331	1,244	402,766	45,960	61,176	107,136	52,067	21,030	73,097	159,203	98,027
11	58.7	EDMONTON	AB	43	11	114	313	377	1,204	306,939	49,646	46,426	96,072	51,341	25,989	77,330	147,413	100,987
12	60.9	LONDON	ON	34	11	59	166	194	1,168	396,873	26,776	39,105	65,881	47,220	17,265	64,485	113,101	73,996
13	62.9	SCARBORO	ON	33	10	0	148	232	1,567	433,364	15,027	49,111	64,138	42,943	0	42,943	107,081	57,970
14	64.7	HALIFAX	NS	12	10	90	82	128	1,560	644,073	28,526	24,288	52,814	36,834	19,667	56,501	89,648	65,360
15	66.1	VICTORIA	BC	51	10	15	154	173	1,123	310,409	18,976	28,827	47,803	31,696	1,239	32,935	79,499	50,672
16	67.3	WILLOWDALE	ON	33	10	0	119	118	991	297,596	12,486	22,928	35,414	24,618	0	24,618	60,032	37,104
17	68.4	SASKATOON	SK	42	10	80	97	116	1,195	366,783	12,810	22,768	35,578	22,549	9,009	31,558	58,127	35,359
18	69.4	WINDSOR	ON	34	10	19	142	212	1,492	357,387	20,859	29,890	50,749	22,258	7,160	29,418	73,007	43,117
19	70.3	REXDALE	ON	33	9	0	31	46	1,483	626,419	1,215	18,204	19,419	17,984	0	17,984	37,403	19,199
20	71.0	WESTON	ON	33	9	0	67	76	1,134	294,328	1,526	18,194	19,720	16,534	0	16,534	36,254	18,060
21	71.8	KITCHENER	ON	34	10	65	69	106	1,536	368,043	9,276	16,119	25,395	16,364	3,537	19,901	41,759	25,640
22	72.6	DOWNSVIEW	ON	33	9	0	79	102	1,291	318,835	2,270	22,918	25,188	15,723	0	15,723	40,911	17,993
23	73.2	OSHAWA	ON	33	9	26	53	78	1,471	345,000	5,904	12,381	18,285	14,638	726	15,364	32,923	20,542
24	73.9	MONCTON	NB	13	10	57	37	46	1,243	468,189	6,609	10,714	17,323	14,549	21,644	36,193	31,872	21,158
25	74.6	NIAGARA FL	ON	33	9	0	42	60	1,428	334,452	3,245	10,802	14,047	14,358	0	14,358	28,405	17,603
	74.6						5,663	1,345			1152,113		2460,589		542,082		4043,968	
							1,201	7,621		434,502		1308,476		1583,379		2125,461		2735,492

RANK	CUMUL %	CITY NAME	PR	DS	GR	DEP OFF	1969 WALK	POP THOU	POP PER LC	DELIVER PER LC	LOCAL VOLUME IN THOUS ORIG	LOCAL VOLUME IN THOUS INCOM	LOCAL VOLUME IN THOUS TOTAL	FWD VOLUME IN THOUS ORIG	FWD VOLUME IN THOUS TRANS	FWD VOLUME IN THOUS TOTAL	TOTAL EX TRANSIT	TOTAL ORIGIN
1	17.1	TORONTO	ON	39	13	0	891	1133	1,271	540,726	222,032	259,755	481,787	378,410	131,865	510,275	860,197	600,442
2	32.0	MONTREAL	PQ	29	13	0	1097	1661	1,514	454,430	287,388	211,122	498,510	239,806	107,090	346,896	738,316	527,194
3	39.1	VANCOUVER	BC	59	12	72	610	683	1,119	390,372	144,201	93,926	238,127	103,605	40,043	143,648	341,732	247,806
4	44.3	WINNIPEG	MB	49	12	194	334	498	1,491	462,242	88,168	66,221	154,389	94,495	73,586	168,081	248,884	182,663
5	48.4	OTTAWA	ON	38	12	59	305	384	1,259	459,793	60,046	80,191	140,237	84,627	25,618	110,245	224,864	144,673
6	51.2	EDMONTON	AB	43	11	114	313	377	1,204	306,939	49,646	46,426	96,072	51,341	25,989	77,330	147,413	100,987
7	54.0	CALGARY	AB	44	11	117	266	331	1,244	402,766	45,960	61,176	107,136	52,067	21,030	73,097	159,203	98,027
8	56.7	QUEBEC	PQ	21	11	94	200	353	1,765	414,010	39,585	43,217	82,802	56,147	10,558	66,705	138,949	95,732
9	59.4	HAMILTON	ON	33	11	41	203	327	1,610	468,773	29,507	65,654	95,161	64,993	11,815	76,808	160,154	94,500
10	61.5	LONDON	ON	34	11	59	166	194	1,168	396,873	26,776	39,105	65,881	47,220	17,265	64,485	113,101	73,996
11	63.6	REGINA	SK	42	10	99	108	131	1,212	385,740	18,022	23,638	41,660	53,318	14,241	67,559	94,978	71,340
12	65.5	DON MILLS	ON	33	9	0	50	56	1,120	659,080	2,053	30,901	32,954	66,302	0	66,302	99,256	68,355
13	67.4	HALIFAX	NS	12	10	90	82	128	1,560	644,073	28,526	24,288	52,814	36,834	19,667	56,501	89,648	65,360
14	69.0	SCARBORO	ON	33	10	0	148	232	1,567	433,364	15,027	49,111	64,138	42,943	0	42,943	107,081	57,970
15	70.4	VICTORIA	BC	51	10	15	154	173	1,123	310,409	18,976	28,827	47,803	31,696	1,239	32,935	79,499	50,672
16	71.7	WINDSOR	ON	34	10	19	142	212	1,492	357,387	20,859	29,890	50,749	22,258	7,160	29,418	73,007	43,117
17	72.7	WILLOWDALE	ON	33	10	0	119	118	991	297,596	12,486	22,928	35,414	24,618	0	24,618	60,032	37,104
18	73.7	SASKATOON	SK	42	10	80	97	116	1,195	366,783	12,810	22,768	35,578	22,549	9,009	31,558	58,127	35,359
19	74.5	KITCHENER	ON	34	10	65	69	106	1,536	368,043	9,276	16,119	25,395	16,364	3,537	19,901	41,759	25,640
20	75.1	ST JOHN'S	NF	11	10	161	40	101	2,525	562,750	9,452	13,058	22,510	14,177	10,212	24,389	36,687	23,629
21	75.8	SAINT JOHN	NB	13	10	73	42	101	2,404	365,500	9,290	6,061	15,351	13,132	10,334	23,466	28,483	22,422
22	76.4	MONCTON	NB	13	10	57	37	46	1,243	468,189	6,609	10,714	17,323	14,549	21,644	36,193	31,872	21,158
23	77.0	KINGSTON	ON	31	9	58	48	59	1,229	395,000	7,807	11,153	18,960	13,299	2,400	15,699	32,259	21,106
24	77.5	OSHAWA	ON	33	9	26	53	78	1,471	345,000	5,904	12,381	18,285	14,638	726	15,364	32,923	20,542
25	78.1	S-CATHERIN	ON	33	9	30	75	97	1,293	264,520	6,312	13,527	19,839	13,082	145	13,227	32,921	19,394
	78.1					5,649		1,362			1176,718		2458,875		565,173		4031,345	
						1,523	7,695		435,276			1282,157		1572,470		2137,643		2749,188

RANK	CUMUL %	CITY NAME	PR	DS	GR	DEP OFF	1969 WALK	POP THOU	POP PER LC	DELIVER PER LC	LOCAL VOLUME IN THOUS ORIG	LOCAL VOLUME IN THOUS INCOM	LOCAL VOLUME IN THOUS TOTAL	FWD VOLUME IN THOUS ORIG	FWD VOLUME IN THOUS TRANS	FWD VOLUME IN THOUS TOTAL	TOTAL EX TRANSIT	TOTAL ORIGIN
1	12.6	TORONTO	ON	39	13	0	891	1133	1,271	540,726	222,032	259,755	481,787	378,410	131,865	510,275	860,197	600,442
2	22.8	MONTREAL	PQ	29	13	0	1097	1661	1,514	454,430	287,388	211,122	498,510	239,806	107,090	346,896	738,316	527,194
3	27.4	VANCOUVER	BC	59	12	72	610	683	1,119	390,372	144,201	93,926	238,127	103,605	40,043	143,648	341,732	247,806
4	31.3	OTTAWA	ON	38	12	59	305	384	1,259	459,793	60,046	80,191	140,237	84,627	25,618	110,245	224,864	144,673
5	34.5	WINNIPEG	MB	49	12	194	334	498	1,491	462,242	88,168	66,221	154,389	94,495	73,586	168,081	248,884	182,663
6	37.7	HAMILTON	ON	33	11	41	203	327	1,610	468,773	29,507	65,654	95,161	64,993	11,815	76,808	160,154	94,500
7	40.6	CALGARY	AB	44	11	117	266	331	1,244	402,766	45,960	61,176	107,136	52,067	21,030	73,097	159,203	98,027
8	43.0	SCARBORO	ON	33	10	0	148	232	1,567	433,364	15,027	49,111	64,138	42,943	0	42,943	107,081	57,970
9	45.2	EDMONTON	AB	43	11	114	313	377	1,204	306,939	49,646	46,426	96,072	51,341	25,989	77,330	147,413	100,987
10	47.3	QUEBEC	PQ	21	11	94	200	353	1,765	414,010	39,585	43,217	82,802	56,147	10,558	66,705	138,949	95,732
11	49.2	LONDON	ON	34	11	59	166	194	1,168	396,873	26,776	39,105	65,881	47,220	17,265	64,485	113,101	73,996
12	50.7	DON MILLS	ON	33	9	0	50	56	1,120	659,080	2,053	30,901	32,954	66,302	0	66,302	99,256	68,355
13	52.2	WINDSOR	ON	34	10	19	142	212	1,492	357,387	20,859	29,890	50,749	22,258	7,160	29,418	73,007	43,117
14	53.6	VICTORIA	BC	51	10	15	154	173	1,123	310,409	18,976	28,827	47,803	31,696	1,239	32,935	79,499	50,672
15	54.8	HALIFAX	NS	12	10	90	82	128	1,560	644,073	28,526	24,288	52,814	36,834	19,667	56,501	89,648	65,360
16	55.9	REGINA	SK	42	10	99	108	131	1,212	385,740	18,022	23,638	41,660	53,318	14,241	67,559	94,978	71,340
17	57.0	WILLOWDALE	ON	33	10	0	119	118	991	297,596	12,486	22,928	35,414	24,618	0	24,618	60,032	37,104
18	58.1	DOWNSVIEW	ON	33	9	0	79	102	1,291	318,835	2,270	22,918	25,188	15,723	0	15,723	40,911	17,993
19	59.2	SASKATOON	SK	42	10	80	97	116	1,195	366,783	12,810	22,768	35,578	22,549	9,009	31,558	58,127	35,359
20	60.3	VILLE-LAVAL	PQ	22	10	17	123	196	1,593	187,133	1,935	21,083	23,018	9,413	0	9,413	32,431	11,348
21	61.2	C-J-CARTIER	PQ	22	10	24	95	130	1,368	248,136	3,110	20,463	23,573	8,409	2,881	11,290	31,962	11,519
22	62.2	ISLINGTON	ON	33	9	0	50	47	940	406,420	956	19,365	20,321	9,116	0	9,116	29,437	10,072
23	63.1	REXDALE	ON	33	9	0	31	46	1,483	626,419	1,215	18,204	19,419	17,984	0	17,984	37,403	19,199
24	63.9	WESTON	ON	33	9	0	67	76	1,134	294,328	1,526	18,194	19,720	16,534	0	16,534	36,254	18,060
25	64.8	NEW WEST	BC	51	10	40	84	87	1,035	260,423	4,606	17,270	21,876	6,245	995	7,240	28,121	10,851
	64.8					5,814			1,340		1137,686		2474,327		520,051		4030,980	
						1,134	7,791		425,580		1336,641		1556,653		2076,704		2604,339	

RANK	CUMUL %	CITY NAME	PR	DS	GR	DEP OFF	1969 WALK	POP THOU	POP PER LC	DELIVER PER LC	LOCAL VOLUME IN THOUS ORIG	LOCAL VOLUME IN THOUS INCOM	LOCAL VOLUME IN THOUS TOTAL	FWD VOLUME IN THOUS ORIG	FWD VOLUME IN THOUS TRANS	FWD VOLUME IN THOUS TOTAL	TOTAL EX TRANSIT	TOTAL ORIGIN
1	15.4	TORONTO	ON	39	13	0	891	1133	1,271	540,726	222,032	259,755	481,787	378,410	131,865	510,275	860,197	600,442
2	28.6	MONTREAL	PQ	29	13	0	1097	1661	1,514	454,430	287,388	211,122	498,510	239,806	107,090	346,896	738,316	527,194
3	34.7	VANCOUVER	BC	59	12	72	610	683	1,119	390,372	144,201	93,926	238,127	103,605	40,043	143,648	341,732	247,806
4	39.2	WINNIPEG	MB	49	12	194	334	498	1,491	462,242	88,168	66,221	154,389	94,495	73,586	168,081	248,884	182,663
5	43.2	OTTAWA	ON	38	12	59	305	384	1,259	459,793	60,046	80,191	140,237	84,627	25,618	110,245	224,864	144,673
6	46.1	HAMILTON	ON	33	11	41	203	327	1,610	468,773	29,507	65,654	95,161	64,993	11,815	76,808	160,154	94,500
7	49.0	CALGARY	AB	44	11	117	266	331	1,244	402,766	45,960	61,176	107,136	52,067	21,030	73,097	159,203	98,027
8	51.6	EDMONTON	AB	43	11	114	313	377	1,204	306,939	49,646	46,426	96,072	51,341	25,989	77,330	147,413	100,987
9	54.1	QUEBEC	PQ	21	11	94	200	353	1,765	414,010	39,585	43,217	82,802	56,147	10,558	66,705	138,949	95,732
10	56.1	LONDON	ON	34	11	59	166	194	1,168	396,873	26,776	39,105	65,881	47,220	17,265	64,485	113,101	73,996
11	58.0	SCARBORO	ON	33	10	0	148	232	1,567	433,364	15,027	49,111	64,138	42,943	0	42,943	107,081	57,970
12	59.8	DON MILLS	ON	33	9	0	50	56	1,120	659,080	2,053	30,901	32,954	66,302	0	66,302	99,256	68,355
13	61.5	REGINA	SK	42	10	99	108	131	1,212	385,740	18,022	23,638	41,660	53,318	14,241	67,559	94,978	71,340
14	63.1	HALIFAX	NS	12	10	90	82	128	1,560	644,073	28,526	24,288	52,814	36,834	19,667	56,501	89,648	65,360
15	64.5	VICTORIA	BC	51	10	15	154	173	1,123	310,409	18,976	28,827	47,803	31,696	1,239	32,935	79,499	50,672
16	65.8	WINDSOR	ON	34	10	19	142	212	1,492	357,387	20,859	29,890	50,749	22,258	7,160	29,418	73,007	43,117
17	66.9	WILLOWDALE	ON	33	10	0	119	118	991	297,596	12,486	22,928	35,414	24,618	0	24,618	60,032	37,104
18	68.0	SASKATOON	SK	42	10	80	97	116	1,195	366,783	12,810	22,768	35,578	22,549	9,009	31,558	58,127	35,359
19	68.7	KITCHENER	ON	34	10	65	69	106	1,536	368,043	9,276	16,119	25,395	16,364	3,537	19,901	41,759	25,640
20	69.4	DOWNSVIEW	ON	33	9	0	79	102	1,291	318,835	2,270	22,918	25,188	15,723	0	15,723	40,911	17,993
21	70.1	REXDALE	ON	33	9	0	31	46	1,483	626,419	1,215	18,204	19,419	17,984	0	17,984	37,403	19,199
22	70.8	ST JOHN'S	NF	11	10	161	40	101	2,525	562,750	9,452	13,058	22,510	14,177	10,212	24,389	36,687	23,629
23	71.4	WESTON	ON	33	9	0	67	76	1,134	294,328	1,526	18,194	19,720	16,534	0	16,534	36,254	18,060
24	72.0	OSHAWA	ON	33	9	26	53	78	1,471	345,000	5,904	12,381	18,285	14,638	726	15,364	32,923	20,542
25	72.6	S-CATHERIN	ON	33	9	30	75	97	1,293	264,520	6,312	13,527	19,839	13,082	145	13,227	32,921	19,394
	72.6					5,699		1,353			1158,023		2471,568		530,795		4053,299	
						1,335	7,713		433,684			1313,545		1581,731		2112,526		2739,754

DIST %	DISTRICT NAME	DS NO	DEPEN OFFIC	1969 WALKS	POPUL. THOUS.	POPUL. PER LC	ANNUAL DEL/LCW	LOCAL VOLUME IN THOUSANDS			FORWARD VOLUME IN THOUS.			TOTAL EX	TOTAL
								ORIGIN	INCOMING	TOTAL	ORIGIN	TRANSIT	TOTAL	TRANSIT	ORIGIN
16.3	TORONTO DISTRICT	33	458	1,554	1,968	1,266	320,455	103,920	394,068	497,988	390,289	19,822	410,111	888,277	494,209
15.4	TORONTO P.O.	39	0	891	1,133	1,271	540,726	222,032	259,755	481,787	378,410	131,865	510,275	860,197	600,442
13.2	MONTREAL P.O.	29	0	1,097	1,661	1,514	454,430	287,388	211,122	498,510	239,806	107,090	346,896	738,316	527,194
4.7	MONTREAL DISTRIC	22	559	842	1,161	1,378	215,718	32,684	148,951	181,635	81,035	25,750	106,785	262,670	113,719
6.1	VANCOUVER P.O.	59	72	610	683	1,119	390,372	144,201	93,926	238,127	103,605	40,043	143,648	341,732	247,806
3.5	VANCOUVER DIST	51	424	603	603	1,000	212,883	36,600	91,769	128,369	67,112	21,271	88,383	195,481	103,712
4.5	WINNIPEG P.O.	49	194	334	498	1,491	462,242	88,168	66,221	154,389	94,495	73,586	168,081	248,884	182,663
1.4	WINNIPEG DISTRIC	41	533	134	224	1,671	407,179	14,099	40,463	54,562	24,995	11,306	36,301	79,557	39,094
6.6	LONDON DISTRICT	34	362	697	937	1,344	324,258	80,844	145,164	226,008	139,995	46,143	186,138	366,003	220,839
4.0	OTTAWA P.O.	38	59	305	384	1,259	459,793	60,046	80,191	140,237	84,627	25,618	110,245	224,864	144,673
2.3	OTTAWA DISTRICT	31	461	271	406	1,498	303,380	24,772	57,444	82,216	46,443	15,528	61,971	128,659	71,215
4.0	QUEBEC DISTRICT	21	792	508	916	1,803	283,047	59,667	84,121	143,788	79,965	42,612	122,577	223,753	139,632
4.0	CALGARY DISTRICT	44	595	388	506	1,304	388,128	59,228	91,366	150,594	71,163	45,575	116,738	221,757	130,391
3.3	SASKATOON DIS	42	732	253	323	1,276	389,197	36,391	62,076	98,467	86,449	44,808	131,257	184,916	122,840
3.2	EDMONTON DISTRIC	43	565	346	450	1,300	335,427	52,873	63,185	116,058	62,557	28,318	90,875	178,615	115,430
3.0	HALIFAX DISTRICT	12	568	209	339	1,622	501,224	40,688	64,068	104,756	61,141	34,515	95,656	165,897	101,829
2.3	ST JOHN (NB) DIS	13	554	154	263	1,707	443,162	23,113	45,134	68,247	59,002	53,567	112,569	127,249	82,115
1.7	NORTH BAY DIS	32	317	192	307	1,598	322,041	18,960	42,872	61,832	30,316	20,278	50,594	92,148	49,276
1.0	ST JOHNS (NF)DIS	11	659	54	169	3,129	623,037	12,232	21,412	33,644	20,900	15,018	35,918	54,544	33,132
100.0	GRAND TOTAL		7,904	9,442	12,931	1,369	366,576	1397,906	2063,308	3461,214	2122,305	802,713	2925,018	5583,519	3520,211

CODING TASK FORCE - VOLUME DATA ANALYSIS - NATIONAL SUMMARY BY "FSA GROUPINGS"

NOV. 1969

TABLE 7

AREA % *	AREA IDENTIFIER	DEPEN OFFIC	1969 WALKS	POPUL. THOUS.	LOCAL VOLUME IN THOUSANDS ORIGIN	INCOMING	TOTAL	FORWARD VOLUME IN THOUSANDS ORIGIN	TRANSIT	TOTAL	ORIGIN & INCOMING	TOTAL ORIGIN	AREA % **
25.7	TORONTO	247	1,805	2,288	277,690	520,968	798,658	634,040	140,946	774,986	1432,698	911,730	25.9
18.1	MONTREAL	630	1,952	2,841	320,137	365,947	686,084	326,034	135,133	461,167	1012,118	646,171	18.4
7.6	VANCOUVER	283	961	1,016	156,144	141,668	297,812	127,392	48,770	176,162	425,204	283,536	8.1
5.1	WINNIPEG	658	395	611	93,912	84,107	178,019	106,566	82,023	188,589	284,585	200,478	5.7
4.6	OTTAWA-HULL	258	402	557	64,417	98,143	162,560	95,847	29,710	125,557	258,407	160,264	4.6
4.3	HAMILTON	90	421	585	42,355	102,405	144,760	93,145	15,940	109,085	237,905	135,500	3.8
3.5	CALGARY	336	348	438	53,813	80,386	134,199	63,818	29,664	93,482	198,017	117,631	3.3
3.3	EDMONTON	565	352	457	53,562	64,822	118,384	63,622	28,536	92,158	182,006	117,184	3.3
2.8	LONDON	113	278	325	35,783	58,652	94,435	61,234	19,844	81,078	155,669	97,017	2.8
2.7	QUEBEC CITY	174	248	427	41,614	48,876	90,490	59,268	13,079	72,347	149,758	100,882	2.9
2.6	HALIFAX	395	155	250	35,556	55,150	90,706	53,610	29,554	83,164	144,316	89,166	2.5
2.3	REGINA	475	160	218	24,541	38,244	62,785	63,358	35,643	99,001	126,143	87,899	2.5
1.7	KITCHENER-W'LOO	152	172	266	15,219	38,649	53,868	41,240	12,438	53,678	95,108	56,459	1.6
1.6	WINDSOR	59	183	265	23,428	37,410	60,838	29,834	9,736	39,570	90,672	53,262	1.5
1.4	VICTORIA	15	161	177	18,976	28,827	47,803	31,696	1,239	32,935	79,499	50,672	1.4
1.4	SASKATOON	481	127	164	16,408	32,127	48,535	29,026	23,392	52,418	77,561	45,434	1.3
1.3	PETERBORO-OSHAWA	130	161	212	13,519	28,006	41,525	29,094	3,531	32,625	70,619	42,613	1.2
1.2	MONCTON	392	77	110	11,766	26,669	38,435	30,213	38,102	68,315	68,648	41,979	1.2
1.1	NIAGARA-ST. CATH.	30	186	239	9,557	24,329	33,886	27,440	145	27,585	61,326	36,997	1.1
1.0	KINGSTON	188	95	125	12,777	22,138	34,915	20,449	7,267	27,716	55,364	33,226	0.9
1.0	ST.JOHN S,NFLD.	637	54	162	12,174	20,709	32,883	20,624	14,783	35,407	53,507	32,798	0.9
0.9	SAINT JOHN,N.B.	137	72	141	11,746	14,298	26,044	26,708	13,121	39,829	52,752	38,454	1.1
0.8	THUNDER BAY	85	73	113	8,523	23,033	31,556	13,269	4,335	17,604	44,825	21,792	0.6
0.8	BARRIE-MUSKOKA	192	75	87	6,324	19,064	25,388	17,146	5,180	22,326	42,534	23,470	0.7
0.7	LEVIS-GASPE	488	87	172	6,522	21,971	28,493	13,232	22,124	35,356	41,725	19,754	0.6
0.7	NORTH BAY-SUDBURY	157	89	115	7,765	19,890	27,655	13,117	10,926	24,043	40,772	20,882	0.6
0.6	KAMLOOPS-OKANAGAN	198	91	93	5,681	15,200	20,881	11,629	11,305	22,934	32,510	17,310	0.5
0.6	TROIS RIVIERES	110	128	236	7,024	15,145	22,169	8,637	4,986	13,623	30,806	15,661	0.4
0.3	CHICOUTIMI	71	87	156	6,782	7,844	14,626	4,784	7,176	11,960	19,410	11,566	0.3
0.3	SYDNEY	158	47	85	4,191	8,039	12,230	6,233	4,095	10,328	18,463	10,424	0.3
100.0	GRAND TOTAL	7,904	9,442	12,931	1397,906	2063,308	3460,622	2122,305	802,713	2925,028	5582,927	3520,211	100.0

* % of: Percentages calculated on Total Originating plus Incoming S/L Letter Mail

** % of: Percentages calculated on Total Originating S/L Letter Mail

SAMSON BELAIR RIDDELL STEAD INC.

Table 8

CODING TASK FORCE

ESTIMATE OF LDU's FOR ZONED CITIES

Zoning Scheme and City	No. of Delivery Points	Estimated No. of LDU's (Note 1)	Avg. No. of Del'y Points per LDU	Walk Evaluation Blocks	Letter Carrier Walks (Note 2)	Avg. No. of LDU's per Walk
3-Character Zoning						
Montreal	576,108	48,440	11.9	16,863	1,117	43
Toronto	359,790	35,965	10.0	13,330	845	43
Vancouver	234,978	25,050	9.4	13,455	666	38
	1,170,876	109,455	10.7	43,648	2,628	42
2-Character Zoning ("new" scheme)						
London	66,147	5,155	12.8	3,048	168	31
Windsor	61,798	4,860	12.7	3,196	141	34
Calgary	111,695	11,025	10.1	6,683	264	42
Edmonton	123,435	13,035	9.5	8,387	319	41
	363,075	34,075	10.7	21,314	892	38
2-Character Zoning ("old" scheme)						
Quebec	100,282	10,435	9.6	6,098	202	52
Ottawa	120,204	11,820	10.2	7,279	304	39
Hamilton	92,092	8,655	10.6	4,777	200	43
Winnipeg	151,565	11,735	12.9	5,968	315	37
	464,143	42,645	10.9	24,122	1,021	42
All Zoned Cities TOTALS	1,998,094	186,175	10.7	89,084	4,541	41

Notes:

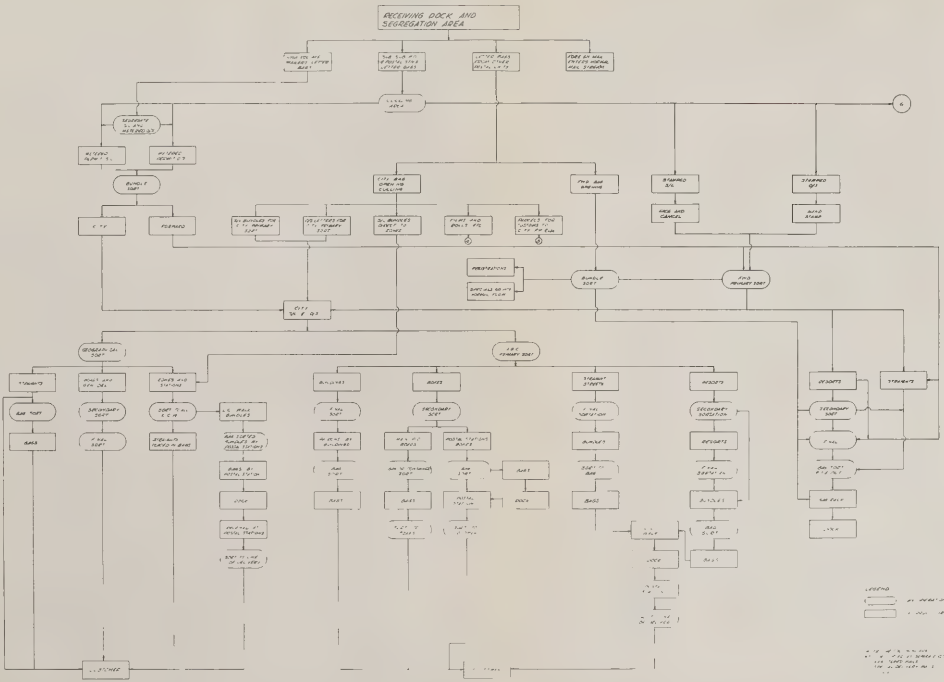
1. These estimates are calculated upon a formula developed from a field work study of selected city zones, as follows:
   - one LDU per walk evaluation block; plus
   - 40% of business delivery points; plus
   - one LDU for every 15 apartment delivery points.

2. This column indicates a close approximation of the number of full letter carrier walks; allowing for a mix of full-time and part-time walks, as at the end of June, 1969.

CODING TASK FORCE

MAIL PRODUCT FLOW IN A LARGE P.O.

EXHIBIT I PART 1 of 2



LETTERS

CODING TASK FORCE

MAIL PRODUCT FLOW IN A LARGE P.O

PART 2 OF 2

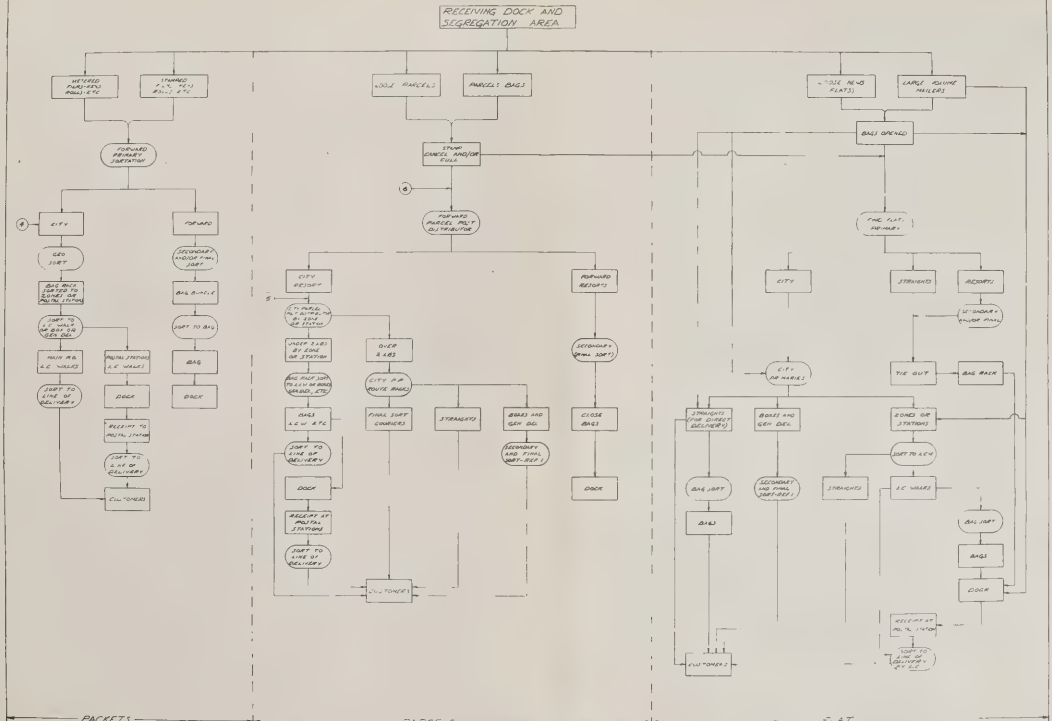
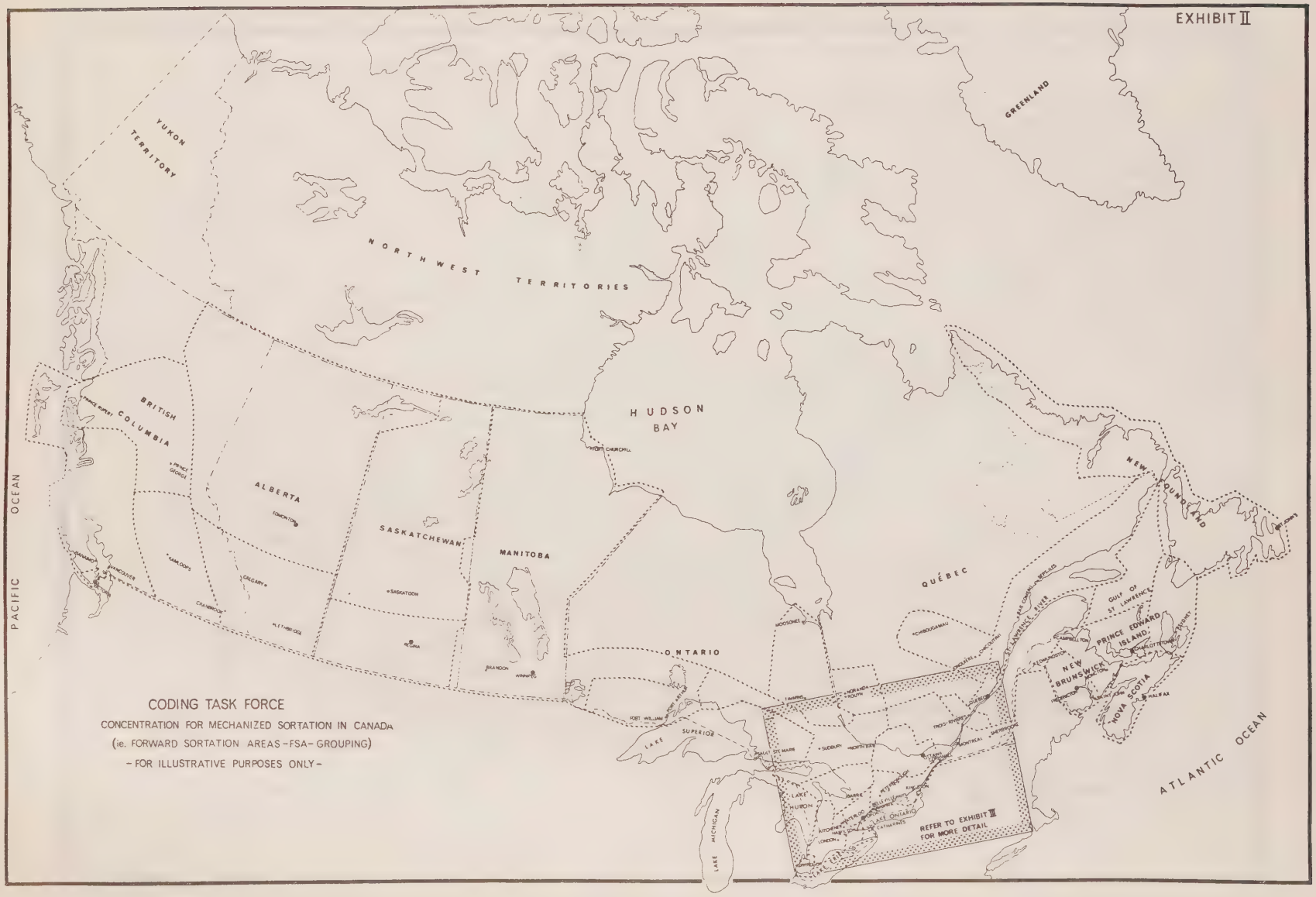


EXHIBIT II



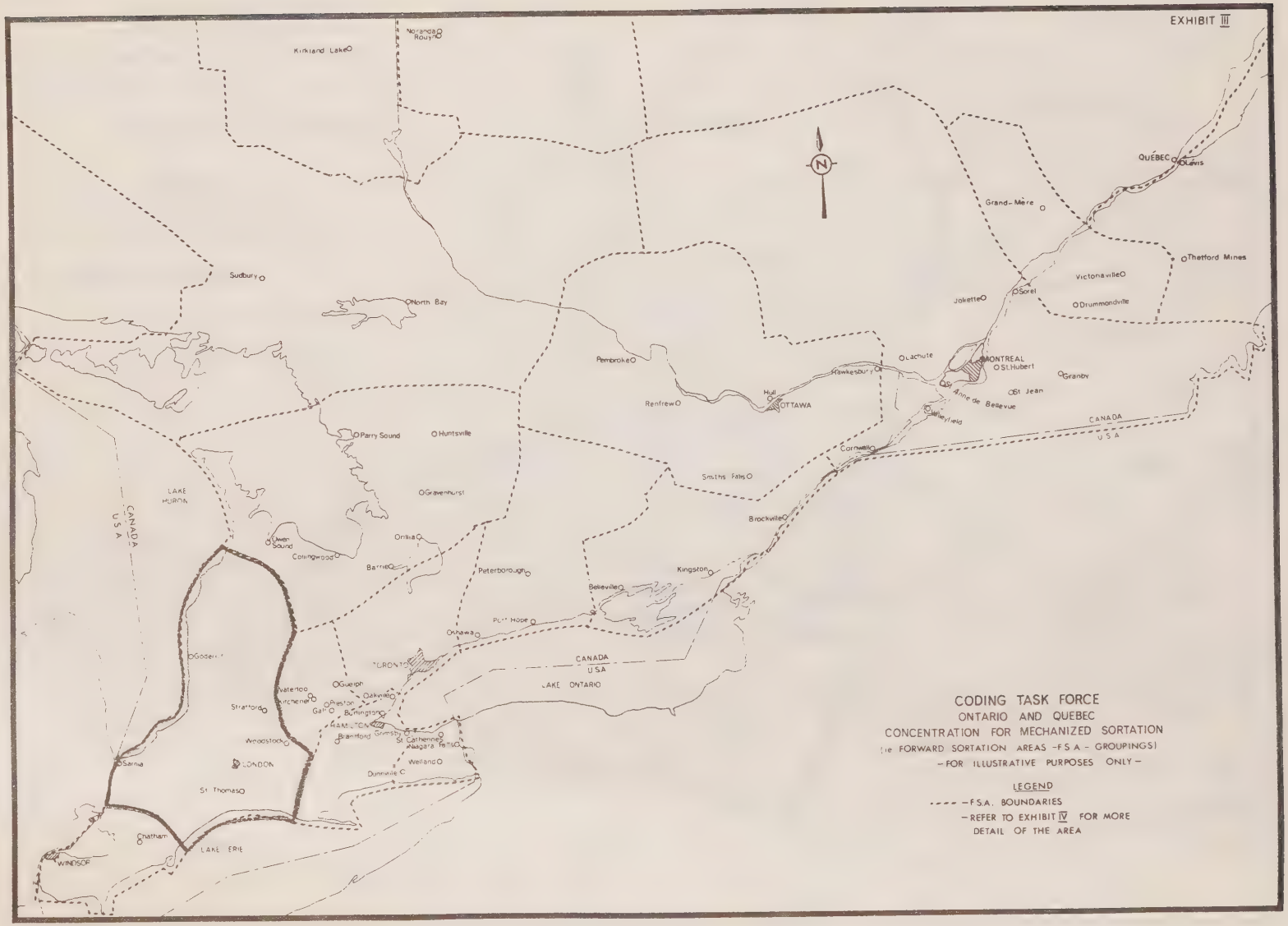
CODING TASK FORCE

CONCENTRATION FOR MECHANIZED SORTATION IN CANADA

(ie. FORWARD SORTATION AREAS - FSA - GROUPING)

- FOR ILLUSTRATIVE PURPOSES ONLY -

EXHIBIT III



CODING TASK FORCE
ONTARIO AND QUEBEC
CONCENTRATION FOR MECHANIZED SORTATION
(ie FORWARD SORTATION AREAS -F.S.A. - GROUPINGS)
- FOR ILLUSTRATIVE PURPOSES ONLY -

LEGEND

----- - F.S.A. BOUNDARIES
- REFER TO EXHIBIT IV FOR MORE DETAIL OF THE AREA

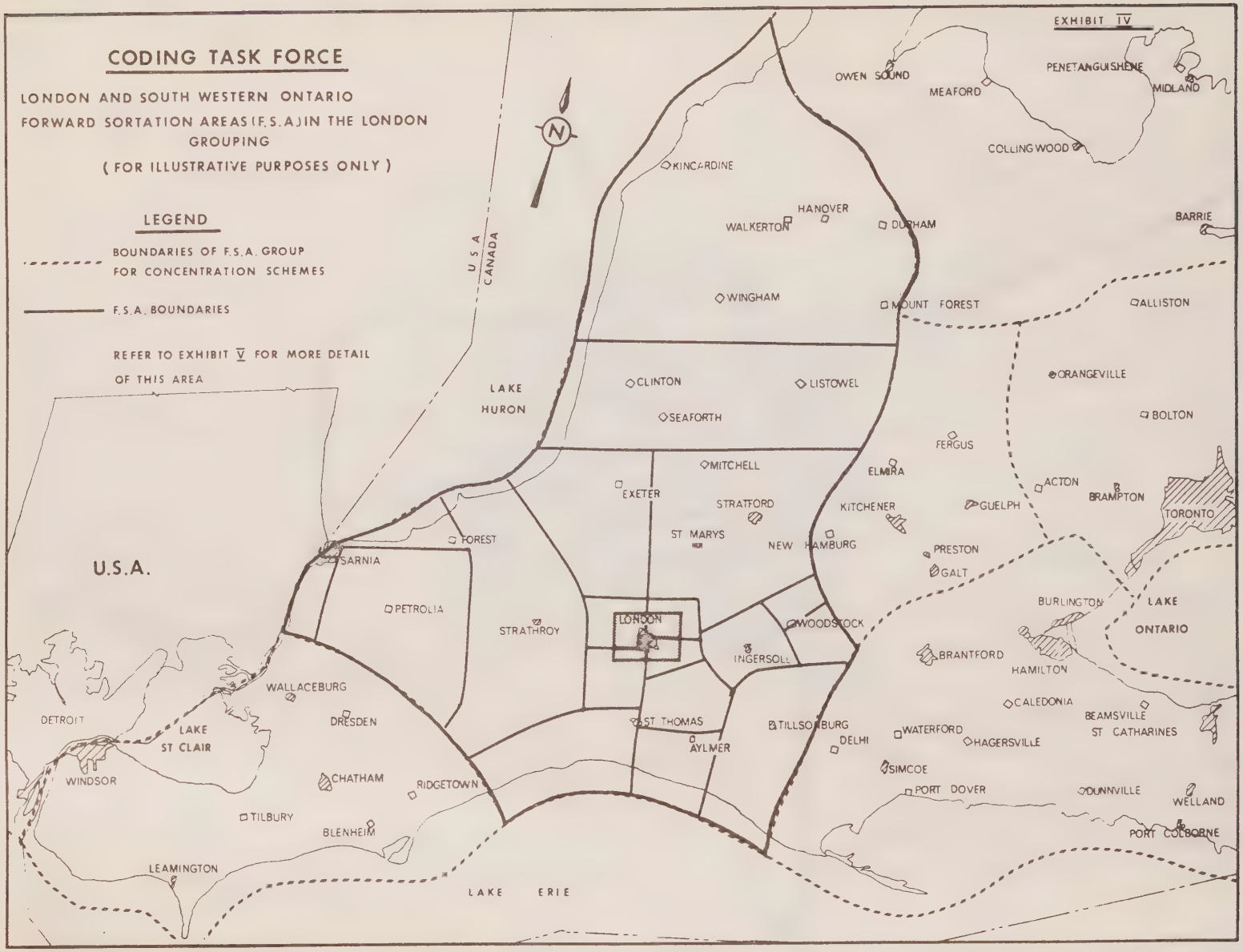


EXHIBIT IV
CODING TASK FORCE
LONDON AND SOUTH WESTERN ONTARIO
FORWARD SORTATION AREAS (F.S.A.) IN THE LONDON GROUPING
(FOR ILLUSTRATIVE PURPOSES ONLY)
LEGEND
BOUNDARIES OF F.S.A. GROUP FOR CONCENTRATION SCHEMES
F.S.A. BOUNDARIES
REFER TO EXHIBIT V FOR MORE DETAIL OF THIS AREA
N
U S A
CANADA
U.S.A.
LAKE HURON
LAKE ERIE
LAKE ONTARIO
OWEN SOUND
MEAFORD
PENETANGUISHENE
MIDLAND
COLLINGWOOD
BARRIE
KINCARDINE
HANOVER
WALKERTON
DURHAM
WINGHAM
MOUNT FOREST
ALLISTON
ORANGEVILLE
BOLTON
CLINTON
LISTOWEL
SEAFORTH
FERGUS
MITCHELL
ELMIRA
EXETER
STRATFORD
KITCHENER
ACTON
BRAMPTON
GUELPH
TORONTO
ST MARYS
NEW HAMBURG
PRESTON
GALT
FOREST
SARNIA
PETROLIA
STRATHROY
LONDON
WOODSTOCK
INGERSOLL
BURLINGTON
BRANTFORD
HAMILTON
CALEDONIA
BEAMSVILLE
ST CATHARINES
WATERFORD
HAGERSVILLE
DELHI
TILLSONBURG
ST THOMAS
AYLMER
SIMCOE
PORT DOVER
DUNNVILLE
WELLAND
PORT COLBORNE
WALLACEBURG
DRESDEN
DETROIT
LAKE ST CLAIR
WINDSOR
CHATHAM
RIDGETOWN
TILBURY
BLENHEIM
LEAMINGTON

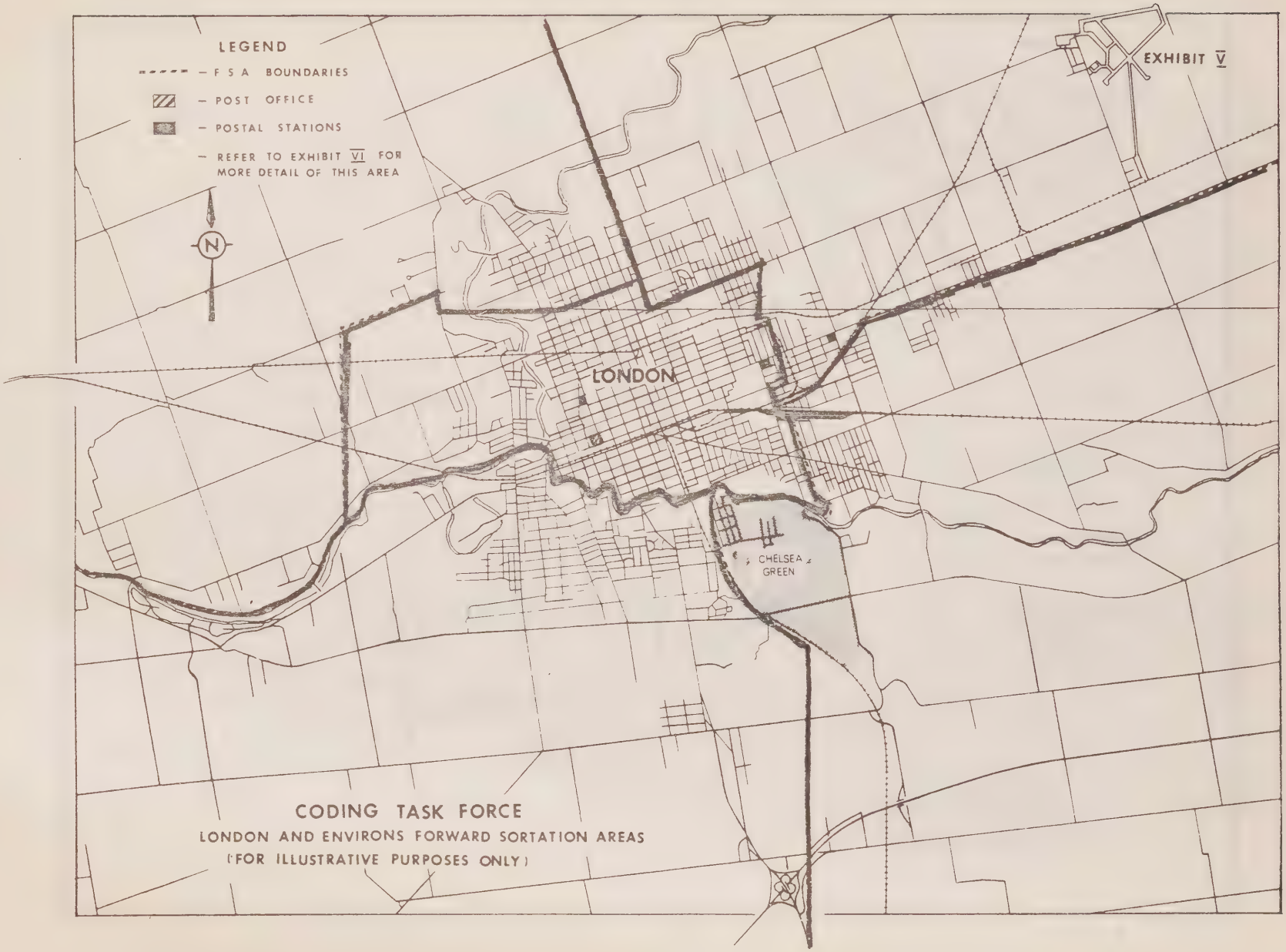

LEGEND
– F S A BOUNDARIES
– POST OFFICE
– POSTAL STATIONS
– REFER TO EXHIBIT VI FOR MORE DETAIL OF THIS AREA
N
EXHIBIT V
LONDON
CHELSEA GREEN
CODING TASK FORCE
LONDON AND ENVIRONS FORWARD SORTATION AREAS
(FOR ILLUSTRATIVE PURPOSES ONLY)

EXHIBIT VI

CODING TASK FORCE

SECTOR OF LONDON ONTARIO
ILLUSTRATING LOCAL DELIVERY UNITS

L.D.U.'s WITHIN A TYPICAL F.S.A.

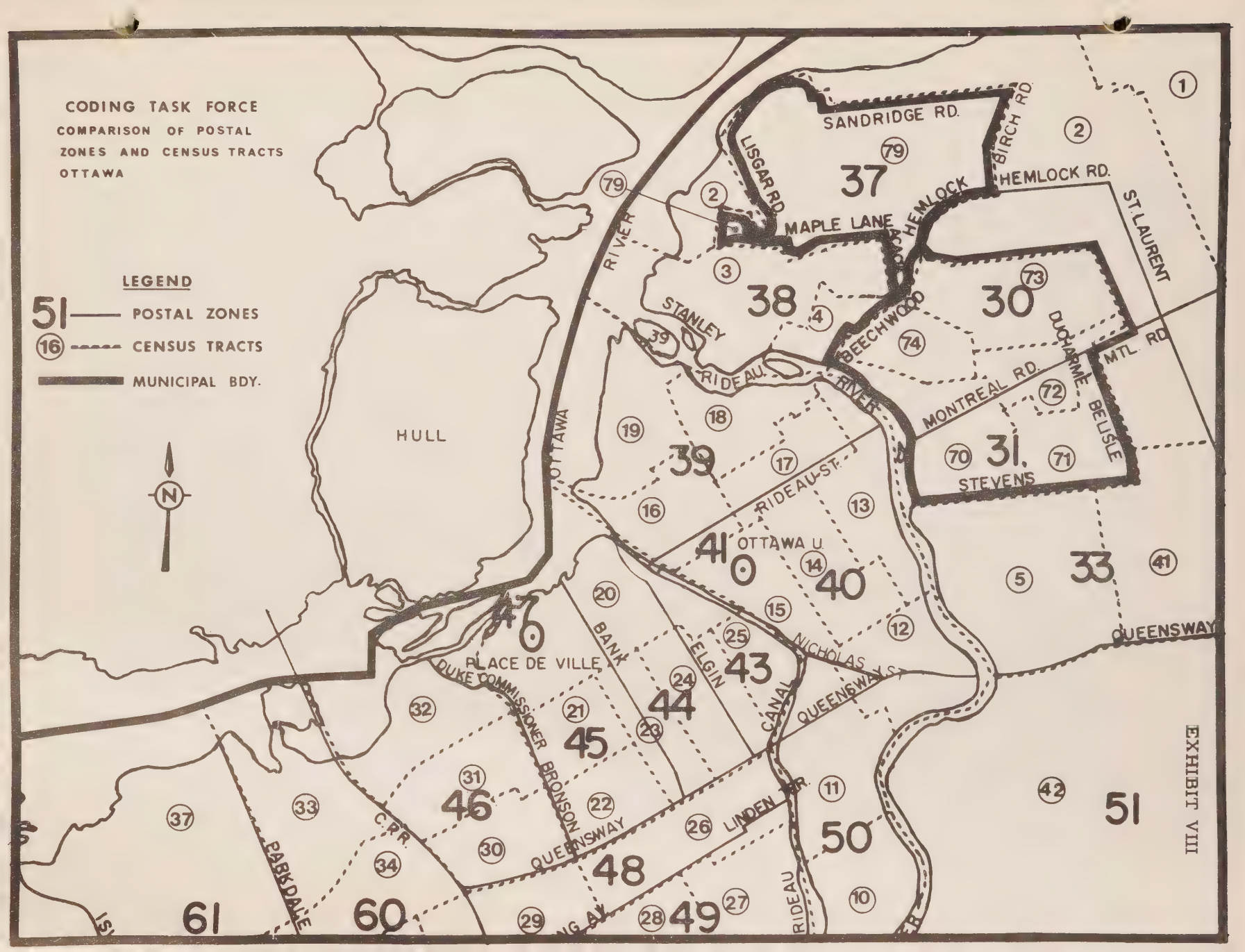
– FOR ILLUSTRATIVE PURPOSES ONLY –

SAMSON
BELAIR
RIDDELL
STEAD
INC

EXHIBIT VII

IMPLEMENTATION PLANNING NETWORK

(Not included in this copy)


CODING TASK FORCE
COMPARISON OF POSTAL ZONES AND CENSUS TRACTS OTTAWA
LEGEND
51 POSTAL ZONES
16 CENSUS TRACTS
MUNICIPAL BDY.
N
HULL
OTTAWA RIVER
RIDEAU RIVER
SANDRIDGE RD.
LISGAR RD.
BIRCH RD.
HEMLOCK RD.
MAPLE LANE
HEMLOCK
ST LAURENT
STANLEY
BEECHWOOD
DUCHARME
MTL. RD.
MONTREAL RD.
BELISLE
RIDEAU ST.
OTTAWA U.
PLACE DE VILLE
DUKE
COMMISSIONER
BRONSON
BANK
ELGIN
CANAL
NICHOLAS
QUEENSWAY
LINDEN TER.
RIDEAU
RABBDALE
C.P.R.
37
38
30
39
31
41
40
33
43
44
45
46
48
50
49
61
60
51
EXHIBIT VIII

TERMS OF REFERENCE

PUBLIC ADDRESS POSTAL CODING SYSTEM

OBJECTIVE

To design a permanent Canadian public address postal coding system; to develop a plan for the introduction and implementation of the coding system and to recommend guidelines for its maintenance.

TERMS OF REFERENCE

1. To evaluate the needs of the operating service for a postal coding system.

2. To design a postal coding system that will

   .1 enable the Department to take full advantage of mechanized and automated sorting machines and, if possible

   .2 to assist the manual mail processing systems to the greatest degree,

   .3 to ensure the highest degree of utilization by both the Post Office Department and the mailing public, especially large volume mailers, and

   .4 to have the flexibility to accommodate population shifts.

3. To evaluate and report on whether the postal coding system could also satisfy the numbering requirements of the Department's management information system.

4. To examine the feasibility of the present 3 character postal zoning system being continued as part of the postal coding system.

5. To determine from a practical operating standpoint if a postal coding system should identify sections or units within a city sortation system which will allow an automated sort directly to the letter carrier walk.

6. To recommend a detailed plan for the introduction and implementation of the postal coding system and to recommend guidelines for the maintenance of such a system.

CODING TASK FORCE - FILE CONTENT OF "DATA BANK"

Item #	Data Field
1.	Office Name (using the 12-position "authorized" abbreviation)
2.	District and Province
3.	Distributing Centre "status", i.e., whether implemented, authorized or still in the planning stage
4.	Number of Dependent Offices
5.	Number of Letter Carrier Walks (in operation - June '65 & June '69)
6.	Number of Points of Delivery served by Letter Carriers
7.	Number of DBS Census Tracts covered by the area
8.	Population (1966 census, in thousands)
9.	Other codes in general use : - Standard airlines code for cities, e.g., YOW, YYZ, YUL - DBS standard geographical classification code (6 digits) - Taxation Div. of National Revenue location code (5 digits) - TIME Inc. code for Dis. Centres and dependent offices (5 digits)
10.	Grade of Office
11.	Annual volume of S/L Letter Mail (in thousands of pieces) : - Local Originating and Local Incoming - Forward Originating and Forward Transit - Total Local Mail - Total Forward Mail - Total Originating Mail - Percentage of National Total, by Office, by District, by "sortation groupings", for the above volume categories
12.	Average population served per Letter Carrier
13.	Average annual volume of S/L Letters delivered per Letter Carrier
14.	Points of Knowledge for sortation in each Office - Local Sortation Points - Forward Sortation Points
15.	Number of Letter Carrier walk-evaluation blocks
16.	For selected cities - Postal Zone and Postal Station details.

CODING TASK FORCE

DISCUSSIONS WITH LARGE VOLUME MAILERS AND OTHERS

GOVERNMENT DEPARTMENTS

- Dominion Bureau of Statistics (DBS)
- Department of National Revenue (Taxation Division)
- Département de la Famille et du Bien-Etre Social, Province de Québec

OTHER POSTAL ADMINISTRATIONS

- British Post Office - London, England
- U.S. Post Office Department - Minneapolis and New York

DIRECT MAILERS

- Canadian Mailings Limited
- Herbert A. Watts Limited
- O.E. McIntyre Limited

In addition, a meeting with members of the CDMA Postal Affairs Committee was held in Montreal.

MAIL ORDER FIRMS

- The T. Eaton Co. Limited
- Simpsons-Sears Ltd.
- Sovereign Seat Cover Manufacturing Limited

FINANCIAL ESTABLISHMENTS

- Bank of Montreal
- The Royal Trust Company

OIL COMPANIES

- Gulf Oil Canada Limited
- Texaco Canada Limited

PUBLISHERS

- McLean-Hunter Publishing Co. Ltd.
- TIME-Life Inc.
- Time International Of Canada Limited

UTILITY COMPANIES

- Bell Canada
- British Columbia Telephone Company
- The Hydro-Electric Power Commission of Ontario

OTHER LARGE MAILERS AND INTERESTED PARTIES

- Cité de Montréal
- CNR/CPR Coding Committee
- CN Express

GUIDELINES FOR THE DEFINITION OF LOCAL DELIVERY UNITS (LDU's)

The code element for Local (or City) sortation would be the LDU. An LDU represents the "largest indivisible delivery module" and, therefore, the basic building block for coding purposes. Guidelines for coding LDU's would need to be carefully defined during the implementation planning for the initial test area. The following points are intended to indicate the principles to be adopted, and Exhibit VI illustrates their application:

1. A separate LDU code would be assigned to each:

   - high volume receiver - an address consistently receiving 25 or more items per day on any delivery

   - apartment building having more than 15 apartment units receiving mail delivery door to door or by locked boxes.

2. "Blockfaces", or a part of one side of a street between intersections, where a letter carrier has no choice of route except along that street, may be "chained" into single LDU's provided that the following rules are applied:

   - existing boundaries must be respected, e.g., where census tract, municipal, county, district or provincial boundaries exist, separate LDU's must be assigned to each side of the boundary line

   - both sides of "natural" boundaries or main traffic arteries would not be chained into a single LDU code

   - no LDU would incorporate more than one street name; however, entire cul-de-sacs, courts or crescents may be assigned to a single LDU

   - LDU's should cut off at logical points such as opposite a street or junction, a footpath or a vacant lot

   - a street, or block, should not be crossed by LDU's at both ends - separate LDU's should terminate at the intersections.

3. An LDU should not represent more than 20 minutes of outside time under the present walk evaluation scheme.

4. Each LDU would be transferable only as a unit in any future walk restructuring, or other changes in mobile delivery routes, group boxes, kiosks or rural routes.

5. Separate LDU's should not be assigned to "domestic" separations, e.g., holding company subsidiaries or registered Head Offices; although many of the "subsidiaries" may each receive 25 or more pieces of mail in a delivery, only one LDU should be assigned to the delivery address.

OBSERVATIONS ON THE DISTRIBUTING CENTRE CONCEPT

Distributing Centres (D/C's) have been identified on a national basis by the Post Office Department, although implementation on a District basis is in various stages between planning and fully operational. We conclude that the concept is sound in principle, and also in practice where it has been fully and effectively implemented, i.e., the D/C's constitute the transportation transfer points in the system - now and for many years to come.

However, from a mail processing (sortation) viewpoint, a cursory examination of the data included in detailed volume tabulations (included in the working papers for this study), summarized in Table 6, indicates various degrees of "operational" implementation throughout the country. For example, in the Quebec and Saskatoon Districts, where the concept has been fully implemented, with attendant changes to sortation schemes, a considerable exchange of mails takes place between D/C's.

In the Winnipeg District on the other hand, implementation has not gone beyond utilizing the transportation aspects of the plan. The Winnipeg terminal is receiving mail and is sorting mail for most of the dependent offices in the District. Little mail is bypassing the Winnipeg terminal, negating one of the main objectives of the concept. We appreciate that national distribution patterns use Winnipeg as a "bulking centre", and local service requirements may, as a result, impose limitations on realizing the objective of bypassing Winnipeg. However, we consider that this bears further examination, because of the effect of operational implementation on Transit mail volumes, illustrated by the following:

Terminal or Major Sortation Plant	% of District's Transit Mail Volumes Processed by the Terminal
Winnipeg	86.8
Regina (Saskatoon Dis.)	31.8
Quebec City (Quebec Dis.)	24.8

IMPLICATIONS OF A SERVICE "PENALTY" ON STAFFING AND MECHANIZATION

The introduction of a postal code, with the need for a high degree of public use, and a concurrent effort by the Post Office to give top service, should generate a consideration of methods of giving preferred service to mailers who use postal codes. One aspect of this consideration might involve the concept of a service "penalty" to uncooperative mailers. Our studies and calculations indicate that:

- uncoded mail would require some manual sortation; in our cost/benefit calculations we have assumed that 30% of the S/L letter mail would be uncoded

- to provide the best service at minimum cost, all sorting would be done between 1430 and 0630 hours, i.e., operating staff would work either an afternoon/evening shift or a night shift - no day shift would be required

- the manual sortation requires a high degree of knowledge.

If a policy were established, that uncoded mail would not be given "best" service, then:

- manual sorting operations could be transferred to a day shift

- less mail would have to be worked during the 1430 - 0630 hours peak period.

The impact of these changes would include:

- personnel possessing the highest degree of sortation knowledge would be enabled to work on the preferred (day) shift: night differential rates for these personnel would be eliminated

- the mechanized equipment required for the peak period operation would be reduced : this would obviously reduce the costs of maintenance, depreciation, and interest on borrowed capital

- public acceptance and usage of coding would probably increase, reducing the volume of uncoded mail to be processed : a decrease in uncoded mail would reduce the number of manual sorting staff required for mechanized sorting - the net effect would be a cost reduction.

In our opinion, there would be a considerable "staff appeal" in the above approach. The more highly skilled personnel (probably the most senior and dedicated) would enjoy the preferred working hours. This would provide an incentive for staff to develop their sortation knowledge. It would be particularly applicable to unmechanized plants, where on-the-job training or experience could be gained during manual sorting on the later shifts.

Cost savings would certainly accrue to the Department, and would be most pronounced in mechanized plants.

ESTIMATED COSTS/BENEFITS OF MECHANIZATION

MONTREAL MAIN POST OFFICE

A. SUMMARY

		$
.1	Estimated Direct Annual Costs based on the "best attainable" manual operation, i.e., with coding and dual-aperture SLB's (as detailed in section B.1 of this Appendix, see page 2)	3,986,000
.2	Estimated Direct Annual Costs of a mechanized operation, i.e., with coding and dual-aperture SLB's (as detailed in section C of this Appendix, see page 4)	4,236,000
.3	Estimated Direct Annual Costs based on the present manual operation (adjusted for volume), i.e., without coding or dual-aperture boxes (as detailed in section B.2 of this Appendix, see page 3)	4,767,000
.4	Estimated Direct Annual Saving - difference between a mechanized operation (.2 above) and the present manual operation (.3 above)	531,000
.5	Estimated Capital Cost of Equipment (as detailed in section D of this Appendix, see page 5)	4,665,000
.6	Annual Return on Capital Investment (.4 above expressed as a percentage of .5 above)	11.4%

B. ESTIMATED DIRECT ANNUAL COSTS OF MANUAL OPERATIONS (Montreal)

.1 Based on the "Best Attainable" System

It has been assumed that:

- coding and dual-aperture SLB's have been implemented
- 40% of City Section sortation would be done by "GEO" staff, and 60% by "A-B-C" staff, as it is now in Montreal
- the basic hourly cost for "GEO" staff would continue at $3.00/hour, and for "A-B-C" staff $1.75/hour
- fringe benefits of 18% would apply to "GEO" staff, to give a composite rate of $3.54/hour; and of 8% to "A-B-C" staff, to give a composite rate of $1.89/hour
- an allowance of 15% has been made on "GEO" staff only, to cover vacations, leave and other absences; no similar allowance is applicable to "A-B-C" staff (with the effect of fringe benefits and allowances included, the average "GEO" staff cost is more than double that for "A-B-C" staff - and this is without considering average productivity)
- the present manual sortation speeds actually being attained in Montreal would be maintained.

	$
Forward section:	
1131 hours at $3.54/hour x 260 days	1,041,000
City section:	
"GEO" - 1966 hours at $3.54/hour x 260	1,809,500
"A-B-C" - 1375 hours at $1.89/hour x 260	675,700
Allowance for vacation, leave, sickness, etc. on "GEO" staff only: at .15 x $2,850,500	427,600
Estimated costs of SLB's	32,400
Total - to page 1 Summary (rounded off)	3,986,200

B. ESTIMATED DIRECT ANNUAL COSTS OF MANUAL OPERATIONS
(Montreal) (cont'd)

.2 Based on the Present Manual Operation (Montreal-adjusted for volume)

It has been assumed that the present manual operation is applicable, i.e., without coding or dual-aperture boxes; and that all other assumptions set out in .1 above remain valid.

	$
Forward section:	
2075 hours at $3.54/hour x 260 days	1,909,800
City section:	
"GEO" - 1691 hours at $3.54/hour x 260	1,556,400
"A-B-C" - 1590 hours at $1.89/hour x 260	781,300
	4,247,500
Vacation and other absences for "GEO" staff only:	
.15 x $3,466,200	520,000
Total - to page 1 Summary (rounded off)	4,767,500

C. ESTIMATED DIRECT ANNUAL COSTS OF A MECHANIZED OPERATION (Montreal)

			Annual Cost $
Direct Labour:			
138	coding desk operators		
46	stacker operators		
76	sorting machine operators		
2	translator staff		
262			
	allowance of 27% reserve staff		
71	for rests, vacation, sickness, breaks, etc.		
333			
99	manual sorters		
15	reserve of 15%		
447	full-time staff at $6,000 per annum		2,682,000
Fringe benefits, i.e., pension, insurance, etc. at 18% of gross salary cost			483,000
Equipment Maintenance:		$	
35	maintenance staff at $8,000 p.a.	280,000	
	- fringe benefits at 18%	50,000	
	- spares, materials at 1.5% of capital cost	70,000	
			400,000
Depreciation of Equipment:			
10% of $4,664,800 (see section D)			466,000
Interest on Borrowed Capital:			
8% of $4,664,800 payable in 10 years; $44 p.a. per $1,000 = 44 x 4,664.8			205,000
Total - to page 1 Summary			4,236,000

D. ESTIMATED CAPITAL COST OF EQUIPMENT (Montreal)

		$
Coding Desks:		
84	for operations	
8	for reserve standby (10%)	
92	at estimated unit cost of $13,650	1,255,800
Stackers:		
14	for operations (1 required for every 6 coding desks)	
2	for reserve standby	
16	at estimated unit cost of $7,800	124,800
Sorters:		
30	for operations	
3	for reserve standby	
33	at estimated unit cost of $62,400	2,059,200
Translators:		
	- the number required would be dependent upon the manner in which machine groups were organized, and upon the complexity of the system: a provision has been estimated at	1,000,000
Collection Boxes:		
	- allowing for duplication of boxes now in use, or provision of a new type of dual-aperture SLB	225,000
Total - to page 1 Summary (rounded off)		4,664,800

E. ASSUMPTIONS MADE IN CALCULATIONS OF COSTS/BENEFITS

.1 The BPO's Newport area study was used in calculating mechanization estimates, with the following exceptions:

- the Newport speeds of 2500 letters/hour through the coding desks for originating S/L mail, and 2100 letters/hour for incoming S/L letters, were reduced to a uniform rate of 2000 letters/hour for all S/L letter mail

- U.K. equipment prices were converted to $2.60 to the pound sterling, and an increase of 50% was estimated to cover costs of transportation, duty and taxes, etc.

- the provision of one million dollars for translators is, in our opinion, a reasonable estimate.

.2 It has been assumed, in estimating machine requirements and staffing:

- that all Forward sortation would require to be completed by 2100 hours each evening: this would be better than is currently being achieved

- that all City sortation to letter carrier walks must be completed by 0630 hours daily, which should include all City mail received up to 0530 hours.

.3 Manpower requirements and costs were estimated on the following basis:

- reserve staff required for mechanized operations were calculated at 27% of the daily strength: this allocation covers:

  - 12% for the break allowances included in present manual operations, plus

  - 15% allowance for vacations, leave, sickness, absenteeism, etc.

- reserve staff required for manual operations were calculated at 15% of the permanent daily strength

E. ASSUMPTIONS MADE IN CALCULATIONS OF COSTS/BENEFITS (cont'd)

.3 (cont'd)

- average annual rates as follows, were used:
  - $6000 for all direct operating staff
  - $8000 for all equipment maintenance staff
  - fringe benefits at 18% of gross wages, for permanent staff
  - fringe benefits at 8% of gross wages, for part-time and casual staffs.

.4 Depreciation on mechanized equipment has been calculated at a rate of 10% per annum, using the "straight-line" method.

.5 Equipment requirements were boosted by 10% to provide for standby units to cover exceptional peaks, regular maintenance and breakdowns.

.6 The calculations were based on the full utilization of mechanized equipment during two daily shifts, with a full shut-down on the third shift: this arrangement would facilitate preventive maintenance and provide up to 50% spare machine capacity for exceptional workloads, e.g., at the Christmas peak period.

.7 Daily mail volumes were derived by dividing the recorded annual volume by 260 days: this derived daily average is "inflated" due to the inclusion of the Christmas peak volumes, but this should provide a margin for other peaks experienced during the year.

.8 It has been assumed that 70% of the S/L letters would be coded by the public, and 100% by the LVM's - with the latter self-sorting at the point of origin, at least to FSA's.

E. ASSUMPTIONS MADE IN CALCULATIONS OF COSTS/BENEFITS (cont'd)

.9 When calculating the effect of double-aperture SLB's, it was assumed that the streamed mail would be 93% "pure", i.e., that 7% of the S/L letters would be placed in the wrong box aperture.

.10 The statement of mechanized system costs includes all the direct costs of coding, sorting, bundling and tieing S/L letters, using mechanical equipment and, wherever necessary, manual labour.

.11 The scheme for the Montreal Main Office assumes that the major sorting plants elsewhere in Canada were also mechanized, and that incoming and transit letters would have been coded and sorted at these other main plants.

.12 No allowances were made for additional building space: neither have one-time start up costs been calculated and included.

.13 The additional benefits to be derived from more direct routing of mail, and a smaller labour force to process an equivalent volume of letters, were not calculated - but they should be considerable in the areas of:

- transportation
- bag handling, break down and make up labour
- supervisory, administrative and other indirect staff costs
- preparation time required by letter carriers
- transmission time on processing floors.

.14 It has been assumed in our calculations for a mechanized system, that uncoded mail could be "short-coded" at the Forward sortation, and "extract coded" at the City section: it was considered unnecessary to provide technical explanations of the methodolgy that could be employed.

ACCOPRESS

GENUINE PRESSBOARD BINDER

ACCO CANADIAN COMPANY LTD.
TORONTO CANADA